The New England
Journal of Medicine

Copyright, 1945, by the Massachusetts Medical Society

Volume 232 JUNE 14, 1945 Number 24

PSEUDODOXIA PEDIATRICA*

HARRY BAKWIN, M.D.†
NEW YORK CITY

ALMOST three hundred years ago, Sir Thomas Browne wrote a treatise comprising seven books entitled *Pseudodoxia Epidemica or Enquiries into very many received Tenents and commonly Presumed Truths*. In this work he analyzed numerous fallacies generally accepted as truths in his day and demonstrated their absurdity.

The superstitions and magic rites that prevailed in the seventeenth century have been largely forgotten. But in the present scientific era, as well, theories and practices persist in medicine even though their falsity is patent or has been demonstrated. It is my purpose in this paper to inquire into some of the current pediatric errors and to analyze the reasons why they persist.

Notable progress in child care has been made since the turn of the century, and the results are strikingly registered in the greatly reduced morbidity and mortality rates for infants and children. Advances in medicine are made not only by the discovery of new principles, new information and new technics but as well by the discarding of false teachings and practices. One recalls how only a few years ago babies' mouths were meticulously cleansed, presumably to remove germs, and how the symmetrical ulcers of the palate, still occasionally seen, resulted. Even more recent was the discovery that mineral oil dropped into the nose, almost a routine procedure among well-cared-for babies a few years ago, may lead to pneumonia. One may mention here also vigorous removal of the vernix caseosa as an etiologic factor in impetigo of the newborn.

That early operative interference in empyema and osteomyelitis is contraindicated has been well established. Unfortunate was the patient of thirty years ago whose attending physician was alert and conscientious and recognized empyema early in its development. It is now known that over-rigid feeding schedules fostered parental overanxiety and frequently led to anorexia in young children.

These are practices that have come to be recognized as erroneous and that have been, in the main, abandoned. But there remain many others, equally erroneous and harmful, that continue in everyday use.

TONSILLECTOMY

Prominent among these unwise practices is indiscriminate tonsillectomy. This subject will not be discussed in detail, since it has already been thoroughly examined by Kaiser,[1] Brennemann,[2] Graeme Mitchell[3] and others.[4] Attention may be called to the facts that mortality from the operation is by no means negligible, about 80 persons dying each year in the United States as a result of the anesthesia administered for this operation (Table 1)

TABLE 1. *The Number of Deaths in the United States Associated with Anesthesia.*

YEAR	TOTAL NO. OF DEATHS	NO. OF DEATHS ACCOMPANYING TONSILLECTOMY AND ADENOIDECTOMY
1922	513	87
1923	474	80
1924	598	73
1925	677	116
1926	654	108
1927	695	112
1928	569	89
1929	690	100
1930	702	91
1931	678	86

and an equal number in England, where chloroform is widely used[5]; that the morbidity from pneumonia, lung abscess, hemorrhage and sepsis is considerable; that the etiologic relation of tonsillectomy to bulbar poliomyelitis is well established[6–11]; and that the operation may be an exciting factor in the anxiety neurosis of children.[12]

A convincing demonstration of the absurdity of indiscriminate tonsillectomy was given ten years ago by the American Child Health Association.[13] It surveyed a group of 1000 children, eleven years of age, from the public schools of New York City and found that 61 per cent of these had had their tonsils removed (Fig. 1). The remaining 39 per cent were subjected to examination by a group of phy-

*From the Department of Pediatrics, New York University College of Medicine, and the Children's Medical Service, Bellevue Hospital.
Presented at a meeting of the American Pediatric Society, Atlantic City, New Jersey, September 27, 1944.

†Associate professor of pediatrics, New York University College of Medicine.

sicians, who selected 45 per cent of these for tonsillectomy and rejected the rest. The rejected children were re-examined by another group of physicians, who recommended for tonsillectomy 46 per cent of those remaining after the first examination. When the rejected children were examined a third time, a similar percentage was selected for tonsillectomy, so that after three examinations only sixty-five children remained who had not been recommended for tonsillectomy. These subjects were not further examined because the supply of examining physicians ran out. The study showed that there was no correlation whatsoever between the estimate of one physician and that of another regarding the advisability of tonsillectomy, and the authors therefore concluded that the chance of a child's being recommended for operation depended principally on the physician rather than on the child's health status.

If anyone suspects that financial considerations influenced the judgment of the physicians, the study showed this not to be the case. For of the children who took to a free clinic their school medical examination slips calling attention to their tonsils, practically all were operated on, whereas of those who went to private physicians only a small proportion were operated on.

The American Child Health Association report emphasized that tonsillectomy, as currently practiced, represents in the main a useless expenditure of time, effort and money. Furthermore, the focusing of interest and effort on this operation leads to neglect of defects that are in need of correction. It was found that, even in groups of children who had severe dental caries and visual handicaps for which practically nothing had been done, about 60 per cent had had their tonsils removed.

The annual cost of the operation must be great. If half the children in New York City have their tonsils removed — an extremely conservative estimate — this means an annual load of sixty-five thousand tonsillectomies, or two hundred each working day. To the cost of medical and hospital care must be added the money spent by social agencies and school nurses in following up children referred for operation. Tonsillectomy is a factor increasing the cost of medical care. Money spent for this operation could be better employed for more useful health measures.

Myringotomy

Until the introduction of the sulfonamide drugs it was not unusual for the large majority of infants in a hospital ward to have purulent otitis media during the winter months. The high incidence of myringotomy was by no means limited to hospitals. In home practice, too, the eardrums were and still are all too freely incised.

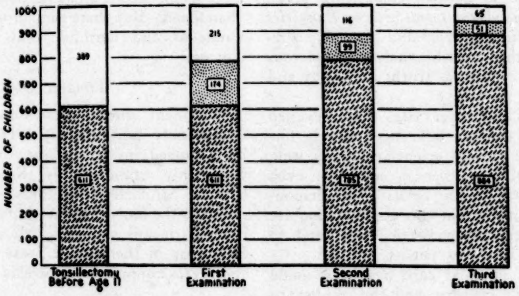

Figure 1. *The Theoretical Survival of Tonsils after Medical Examination.*

The attitude toward otitis media has changed somewhat since the introduction of the sulfonamide drugs. Interest has diminished to a considerable extent and tension and anxiety have lessened. The great diminution in the incidence of purulent otitis media is generally attributed to the new drugs, but this conclusion is not entirely justified, certainly not in the case of infants. It was possible to show at Bellevue Hospital — before the use of the sulfonamide drugs — that the incidence of purulent otitis media in infants could be greatly reduced simply by limiting otoscopic examinations and by laying down stringent criteria for myringotomy.[14]

During the three-year period 1931–1933, 23.3 per cent of the infants under two years admitted to the Children's Medical Service at Bellevue Hospital developed a purulent discharge from the middle ear (Fig. 2). In the five-year period 1934–1938, after the campaign against indiscriminate myringotomy had begun, the incidence was only 8.9 per cent — that is, a little more than one third the previous rate. The proportion of infants operated on for

mastoid disease also fell (from 1.38 per cent of all admissions to 0.56 per cent). Especially striking was the reduction of purulent otitis media after myringotomy (from 15.6 per cent admissions in the early period to 4.7 per cent later), but even after spontaneous rupture the number of cases diminished

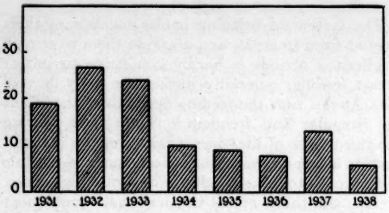

FIGURE 2. *The Incidence of Purulent Otitis Media in Percentage of Admissions. (Bakwin and Jacobziner[14] — reprinted by permission of the publisher.)*

(from 7.6 to 4.5 per cent). This study showed beyond reasonable doubt that it is possible to induce purulent otitis media through excessive manipulation in the ear canal. It is little wonder, then, that there are many who consider the use of the direct otoscope a curse rather than a blessing.

Deliveries of Babies in Hospitals

During recent years there has been a rapid increase in the percentage of hospital deliveries in America. In New York City, for example, 97.3 per cent of all births took place in hospitals during 1943, in comparison with 61.9 per cent in 1929, an increase of over 50 per cent in less than fifteen years.* The popularity of hospital deliveries has extended to all parts of the country and to rural as well as urban communities.

The hospital obviously offers certain advantages for mother, baby and obstetrician. The arrangements are presumably better, although the occurrence of epidemic diarrhea in some of the best hospitals and its absence from some of the more modest ones should make one cautious about drawing conclusions regarding the value of hospital equipment. Certainly better facilities are at hand for treating emergencies. Furthermore, the modern home — at any rate in many large cities — is often too small to permit the privacy desirable for delivery. For the obstetrician the hospital is a much easier place than the home in which to work.

There are, however, no data indicating that indiscriminate hospitalization for delivery has had a favorable influence on either maternal or neonatal mortality (Fig. 3). Between 1929 and 1933, the percentage of infants born in hospitals in New York City rose from 61.9 to 78.2 per cent. During the same period the maternal mortality increased from 5.4 to 6.4 per cent and the neonatal mortality showed a slight fall. Since 1933 there has been a steady steep decline in maternal mortality, the rate falling from 6.4 per 1000 live births in 1933 to 2.2 in 1941. During these same years the rate of increase in hospitalization decreased. Whereas the percentage of hospital deliveries rose by 3.2 each year from 1929 to 1933, the annual percentage increase between 1933 and 1941 was only 1.9. The drop in neonatal mortality continued at a slightly accelerated rate.

Of interest in this connection is the experience of the Frontier Nursing Service of Kentucky, organized by Mrs. Mary Breckinridge in 1925. The results of their experience with the first 4000 deliveries are summarized in Table 2.[15] The large majority

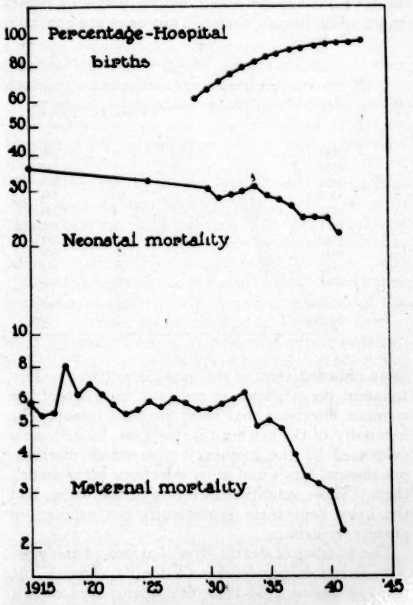

FIGURE 3. *The Percentage of Deliveries in Hospitals, the Neonatal Mortality (under one year) and the Maternal Mortality for New York City (1929–1943).*

(92.7 per cent) of deliveries were done in the homes, which were extremely poor ones, and by midwives. The maternal mortality was only 0.75 per 1000 births, as compared with 5.6 for the white population of the United States at the same time and 5.2 for the white population of Kentucky. Operative

*These data were kindly supplied by T. J. Duffield, Registrar of Records, New York City.

deliveries were rare. The stillbirth and neonatal death rates did not differ significantly from those of the country as a whole.

Hospitals are unsuited for the care of the newborn. Physicians and parents who would hesitate to permit an older infant in a hospital ward seem to have no qualms about having newborn babies there, even though obstetric nurseries are generally more crowded than is the usual infant ward. Fortunately the newborn is resistant to many of the common infections that beset the older infant. The immunity of the newborn is, however, limited, as is evidenced by the frequency with which diarrhea, pneumonia, sepsis and other infections occur among them. These conditions are rare in the home, and the baby kept there is obviously not exposed to nursery epidemics.

TABLE 2. *Statistical Analysis of the First 4000 Deliveries by the Frontier Nursing Service.*

Percentage of babies delivered in the home	92.70
Percentage of babies delivered in the hospital	7.30
Puerperal deaths per 1000 live births	0.76
Cesarean operations per 1000 births	0.18
Forceps deliveries per 1000 births	0.83
Neonatal deaths per 1000 live births	30.3*
Stillbirths per 1000 live births	30.20

*This figure is slightly below the rate for Kentucky during the same period.

The number of deaths from diarrhea of the newborn is not inconsiderable (Table 3). During the ten-year period 1934-1943, 669 infants died of this condition in New York City.

A great drawback in the hospital is the separation of mother and baby. This is unnatural and unphysiologic. Certainly among mammals it is the rule that the young remain in close contact with the mother during early life, snuggling against her.

Whereas the hospital facilitates the work of the obstetrician, it hampers that of the pediatrician, especially in the handling of private patients. The obstetric hospital is in good part responsible for the failure of many mothers to breast-feed their babies. The pediatrician is generally called in several days after delivery, during which time no effort has been made to initiate breast feeding. Instead, a formula has been prescribed, and this, since it satisfies the appetite, discourages the baby from sucking the breast, thereby removing the stimulus for secretion of milk.

The system of bringing babies to their mothers only at fixed intervals and allowing them to remain for limited periods is hardly conducive to proper breast feeding, especially during the early days of life. At this time the feeding demands of the infant are irregular and frequent.[16] Only later, during the third week of life, does a fairly regular demand rhythm become apparent. It is obviously impossible in a hospital to bring a baby to its mother whenever it cries, and this is one of the drawbacks consequent on hospital delivery. But even in hospitals more freedom could be given than is at present the custom. Since the appearance of epidemics of diarrhea in the newborn, this artificial situation has been further intensified, and the nurse is now fortified by department-of-health regulations.

TABLE 3. *Data on Epidemic Diarrhea of the Newborn in New York City (1934-1943).*

YEAR	NO. OF OUTBREAKS	NO. OF EXPOSED BABIES	NO. OF CASES	MORBIDITY %	NO. OF DEATHS	MORTALITY %	CASE FATALITY %
1934	1	386	72	18.0	32	8.3	44.0
1935	7	1,649	205	12.4	96	5.8	46.8
1936	9	1,866	262	14.1	135	7.2	51.5
1937	10	1,181	211	17.9	93	7.9	42.1
1938	9	1,614	121	7.5	52	3.1	42.9
1939	19	2,540	362	14.3	132	5.2	36.5
1940	5	221	73	33.5	22	10.0	30.1
1941	12	609	105	17.2	19	3.1	18.1
1942	13	738	156	21.2	30	4.1	19.2
1943	20	1,765	297	16.9	58	3.3	19.6
Totals	105	12,569	1,864		669		
Averages				14.8		5.3	35.9

In the newborn, this artificial situation has been further intensified, and the nurse is now fortified by department-of-health regulations.

That the hospital is the proper place for the delivery of selected patients where difficulties are anticipated is apparent. But some modification of the present system of indiscriminate hospital delivery is indicated. Relegation of the baby to a nursery is by no means a universal practice. It is the custom in most European hospitals to keep the baby in a crib at the foot of the mother's bed. Having a newborn child in a ward with several other mothers and babies is far from an ideal arrangement, but it may be preferable to ours. There are several other alternatives — a return to home delivery except where there are special reasons for hospital delivery, smaller nurseries or a shorter stay of the mother and baby in the hospital.

The subject is a timely one. With the overcrowding in obstetric hospitals at the present time, it is extremely difficult to give a sick child the attention he requires. Aside from other considerations, in-

discriminate hospitalization increases the cost of medical care without benefiting anyone.

Hospital Care of Infants and Young Children

For some years it has been recognized that the hospital is unsuited for the care of infants. It seems likely that the high mortality in institutions for the care of healthy infants was due to emotional deprivation.[17] Although many hospitals supply play and other outlets for older children, few make any such provision for infants. Rigid segregation for this age group is still the rule in most of the best infant hospitals. Meticulous care is given to the dietary needs, including vitamin supplements, even when the infant is to remain in the hospital for only a few days, yet no attention is paid to the psychologic needs. Parents are carefully excluded, and the babies are handled by doctors and nurses as little as possible.

There is need for a fuller appreciation of the results of emotional deprivation in hospitalized infants. There should be a suitable program.

Runabouts, too, are in general poorly managed in hospitals from a psychologic viewpoint. Little or no time is spent by the nurses in training the child to eat by himself, to dress himself or to control his bowels and bladder. With these functions aside, the child receives little attention and affection unless he happens to become the ward favorite. Here too the nursing staff needs fuller understanding and an active program.

Errors of Psychologic Management

Although pediatricians have shown an increasing interest in the psychologic care of the child, they still underestimate its importance or are unwilling to make the effort necessary to inform themselves about it. Consequently the field has been left largely to nonmedical groups whose viewpoint is necessarily limited by lack of understanding of the growing child as a whole. The child is caught between the sentimentality of lay groups and the indifference of the pediatricians.

There is a general impression among pediatricians that consideration of the psychologic attributes is time-consuming. This is true to some extent of the treatment of behavior disorders, but it is not true of the handling of the general run of children. It requires little time to explain to a mother the principles underlying child training and the proper technics to be employed. It does not take long to explain to a mother how a crippled child should be managed psychologically and what the results of mismanagement may be. It requires no extra time for the experienced pediatrician to recognize overanxiety, overprotection, overauthority and so forth in a parent, and it requires but a few minutes to discuss them.

Aside from the fact that positive contributions can be made in this way to the health and happiness of both parent and child, appreciation of the psychologic attributes adds interest and zest to the work of the pediatrician, whose time is so largely taken up with the care of well children and children with common colds.

Pediatrics of the recent past was dominated to a large extent by a mechanistic viewpoint toward child rearing, and little or no attention was paid to emotional and spiritual needs. In its extreme form this attitude was expressed by Watson[18] (who is not a physician) in his book published in 1928. He wrote: "It is a serious question in my mind whether there should be individual homes for children — or even whether children should know their own parents. There are undoubtedly much more scientific ways of bringing up children which will probably mean finer and happier children." Although pediatricians never overtly endorsed these views, nevertheless many of the accepted practices, such as the rigid attitude toward dietary prescriptions and schedules and the discarding of the cradle and many other devices to please infants, implied tacit acceptance. A wholesome change has taken place within recent years, and children are now looked on as having emotional and mental attributes as well as physical ones.

Praiseworthy as is this change, certain fallacious views have already gained wide acceptance, principally among child psychologists and educators. The reaction to the over-rigidity of the past has led to a policy of overindulgence. Too much discipline has been replaced by too little. The pendulum has swung from a puritanical negation of the lighter pleasures to hedonism. In an effort to prevent insecurity, which to many is the principal aim of child rearing, children are coddled. This is unfortunate, since discipline is necessary for proper training. There is need for a better balanced viewpoint.

MEDICAL LIBRARY

Chef or Dietitian

It is unusual nowadays to see a new patient who is not receiving vitamin supplements, yet there is no definite clinical evidence that deficiency diseases are at all widespread among children or that any benefit can be derived from the general use of vitamins, except in the case of vitamins C and D in infancy. Aside from the fact that most of the preparations used are expensive and that their administration is an extra chore and means, to a certain extent, invalidizing the child, a major fallacy is implied in the modern attitude toward diet. It is that appetite cannot be trusted in the selection of a proper diet and that laboratory investigations have progressed to the stage where they can be trusted to make such a selection. Except for limited groups, where deficiency disease is prevalent, this is an un-

warranted assumption. Hear what the poet Ogden Nash[19] has to say about modern eating:

> Our daily diet grows odder and odder —
> It's a wise child that knows its fodder.

Within recent years another change in children's eating customs has been advocated. It has been proposed that children eat one or more meals a day at school. The purpose of this is to supply the child with at least one "well-balanced" meal a day. According to Miss Dorothy Thompson,[20] heretofore known as a writer on politics but apparently also an expert on children's eating, such a program, financed of course by the Government, would not only greatly improve the health of the children but would also be more economical than the present one.

The effects of these mistaken teachings are widespread and profound. The food one eats and the manner of eating it have been integral parts of the culture of the home. Around the dinner table the family assembles not only to eat but to discuss family problems, exchange ideas and also give thanks to an unknown giver for favors, small and large. Surely we have been endowed with the sensation of taste for some purpose. Eating should mean roasts, sauces, puddings, pies — not calories, vitamins, minerals. A bit of home cooking is what men travel far to enjoy. The dining table should mean lively discussion and conversation, light or profound. It should be a pleasure, not metabolic wrangling. As between chef and dietitian, I choose the chef without reservation.

* * *

There are numerous other erroneous practices. Such are the unnecessary treatment of physiologic bowing of the legs; the premature use of orthodontia; the diagnosis and treatment of rickets because the ribs flare or the legs are bowed or the head shape is unusual, although rickets is not the cause. Physicians continue to prescribe expensive sugars for babies, although their superiority over ordinary cane sugar has not been demonstrated. Vitamin D is prescribed during the summer months, when it is not necessary.

Education of the Pediatrician

A major error in pediatric education is the failure to prepare students properly for practice in the home. Whether or not by intention, the impression is given that the management of disease in the home requires elaborate and expensive procedures. The student, entering practice after leaving a university hospital, believes that proper management of a child with lobar pneumonia includes a blood-cell count, a throat culture, a chest roentgenogram, a urine examination, perhaps a blood culture, and determination of the sulfadiazine blood level. Since he is not able to have these done, he feels that he is doing slipshod work and consequently lacks that self-confidence which is so important in his work. He acquires, instead, a feeling of inferiority that interferes with the sense of satisfaction to which he is entitled. The medical student and the intern should know that the various laboratory procedures are used in hospitals primarily for purposes of teaching and study, and that he is exposed to them in the hospital so that he may learn to dispense with them in the home except when there are specific indications.

The medical student, learning his medicine in the impersonal atmosphere of the hospital, fails to comprehend the importance of disease and death to the family group. To him a death is a statistic. He is not taught to understand, nor can he be expected to grasp unaided, the sorrow, the feelings of emptiness, frustration and defeat, the fear and even the terror that overcome the parents of a child, ever so young, who has died. If he is to serve his function properly he needs to comprehend these things,— now, perhaps more than ever, since with so many people lacking the consolation of formal religion he must, in addition to his other functions, often take on the work of the spiritual comforter.

A further error in teaching medical students is the failure to emphasize sufficiently the personal nature of disease. Not disease as an abstraction but people with disease is what needs to be stressed.

Reasons for Errors

Why do we continue to countenance practices that we recognize as false?

One of the most frequent reasons for error is the tendency to accept ideas because they seem reasonable even though they have not been checked by experimentation or proved in practice. About twenty-five years ago it was suggested that vitamin D therapy should be withheld in infants with tetany until calcium salts have been given for a day or two. The reason given was that, if vitamin D is administered immediately, calcium is withdrawn from the circulating fluids and deposited in the rachitic bones and the tetanic manifestations are thereby intensified. Although this idea was based on the flimsiest sort of evidence, — indeed, it was quickly found to be false, — it has nevertheless persisted and can be found in the principal American pediatric texts. It has remained because it is an attractive rationalization. This teaching is not only false; it is dangerous. The quickest and most effective way to bring a tetanic child out of the danger zone is by the prompt administration of a large dose of vitamin D.

Another false idea that has survived for some twenty years because it seems reasonable is that an estimation of the sugar in the spinal fluid is of little value without a simultaneous determination of the blood-sugar level. Although it is true that in diabetes mellitus and hypoglycemic shock, the sugar in the spinal fluid may be significantly altered,

under ordinary circumstances it bears no predictable relation to the sugar level in the blood, and for clinical purposes the relation has no significance.

The present reliance on the hospital as the proper place for the delivery of babies is also based on rationalization. The hospital, with its up-to-date equipment and its trained personnel, seems far superior to the humble home and the midwife. So we continue to deliver babies in the hospitals in face of the high maternal mortality and the real risks to the baby.

Another reason why many mistaken practices persist is the indifference of the academic pediatrician to the details of everyday practice. Absorbed in the study of disease mechanisms and their management, he lacks interest in or fails to appreciate the importance of such false practices as indiscriminate tonsillectomy and myringotomy. On the shoulders of the academic pediatrician rests also the responsibility for failure to train the physician to practice properly in the home.

A prominent source of pseudodoxia pediatrica is the tendency to do too much. The physician, eager to justify his function, is rarely content to tell the parent of a child who comes for a health examination that the child has no defects that require correction. He finds flat feet, large tonsils, malocclusion, a heart murmur, a tight prepuce, rickets, undernutrition and poor posture. Most of these are normal variants, but the physician often leads the patient's parents to unnecessary trouble, expense and anxiety by his prescriptions.

The mistaken practices and attitudes that have been listed are not isolated phenomena. They are part and parcel of the practice of medicine today, resting on assumptions that permeate daily routines. They represent, so to speak, the dead wood of medicine, perhaps the necessary obverse of gains in medical experience. It seems almost as though the slow acquisition of knowledge were inevitably accompanied by error. Yet the progress of humane science requires that the freight of error be lessened steadily if the vessel is to make surer and swifter progress. As Marcel Proust[21] so wisely said:

> For, medicine being a compendium of the successive and contradictory mistakes of medical practitioners, when we summon the wisest of them to our aid, the chances are that we may be relying on a scientific truth the error of which will be recognized in a few years' time. So that to believe in medicine would be the height of folly, if not to believe in it were not greater folly still, for from this mass of errors there have emerged in the course of time many truths.

132 East 71st Street

References

1. Kaiser, A. D. *Children's Tonsils In or Out: A critical study of the end results of tonsillectomy.* 307 pp. Philadelphia: J. B. Lippincott Company, 1932.
2. Brennemann, J. The tonsil and adenoid problem. In Brennemann's *Practice of Pediatrics.* Vol. 2. Chap. 40. Hagerstown, Maryland: W. F. Prior Company, 1937.
3. Selkirk, T. K., and Mitchell, A. G. Evaluation of results of tonsillectomy and adenoidotomy. *Am. J. Dis. Child.* **42**:9-41, 1931.
4. Reimann, H. A., and Havens, W. P. Focal infection and systemic disease: critical appraisal: case against indiscriminate removal of teeth and tonsils. *J. A. M. A.* **114**:1-6, 1940.
5. Glover, J. A. Tonsillectomy in school-children. *Lancet* **1**:1278, 1938.
6. Aycock, W. L., and Luther, E. H. Occurrence of poliomyelitis following tonsillectomy. *New Eng. J. Med.* **200**:164-167, 1929.
7. Silverman, A. C. Acute poliomyelitis in Syracuse, New York: clinical analysis of five successive outbreaks from 1922 to 1929, with special reference to epidemiology and treatment with serum. *Am. J. Dis. Child.* **41**:829-861, 1931.
8. Sabin, A. B. Experimental poliomyelitis by tonsillopharyngeal route, with special reference to influence of tonsillectomy on development of bulbar poliomyelitis. *J. A. M. A.* **111**:605-610, 1938.
9. Eley, R. C., and Flake, C. G. Acute anterior poliomyelitis following tonsillectomy and adenoidectomy, with special reference to bulbar form. *J. Pediat.* **13**:63-70, 1938.
10. Fischer, A. E., and Stillerman, M. Acute anterior poliomyelitis in New York in 1935: review of 686 cases. *Am. J. Dis. Child.* **54**: 984-1004, 1937.
11. Francis, T., Jr., Krill, C. E., Toomey, J. A., and Mack, W. N. Poliomyelitis following tonsillectomy in five members of family: epidemiologic study. *J. A. M. A.* **119**:1392-1396, 1942.
12. Langford, W. S. Anxiety attacks in children. *Am. J. Orthopsychiat.* **7**:210-218, 1937.
13. *Physical Defects: The pathway to correction.* Chap. 8. New York: American Child Health Association, 1934. Pp. 80-96.
14. Bakwin, H., and Jacobziner, H. Prevention of purulent otitis media in infants. *J. Pediat.* **14**:730-736, 1939.
15. Steele, E. S. Report on the fourth thousand confinements of the Frontier Nursing Service, Inc. *Quart. Bull. Frontier Nursing Service* **16**:3, 1941.
16. Simsarian, F. P., and McLendon, P. A. Feeding behavior of infant during first twelve weeks of life on self-demand schedule. *J. Pediat.* **20**:93-103, 1942.
17. Bakwin, H. Loneliness in infants. *Am. J. Dis. Child.* **63**:30-40, 1942.
18. Watson, J. B. *Psychological Care of Infant and Child.* New York: W. W. Norton and Company, 1928. Pp. 5 and 6.
19. Nash, O. Look what you did, Christopher. In *The Face is Familiar.* 352 pp. Boston: Little, Brown and Company, 1940.
20. Thompson, D. Our children must be fed. *Ladies' Home Journal* August, 1944. P. 6.
21. Proust, M. *The Guermantes Way.* Vol. 1. New York: Boni, 1930. P. 929.

AN EVALUATION OF SULFONAMIDE OINTMENT BASES*

RUTLEDGE W. HOWARD, M.D.†

BOSTON

THE proved value of the sulfonamides for systemic use has led to a widespread application of these drugs for the treatment of surface infections. Recent studies tend to show that the type of base used as a vehicle for sulfonamides is of great importance. In 1941, Pillsbury and his co-workers[1] showed clinically that sulfathiazole is not so effective in an all-grease base as in an oil-in-water emulsion or stearate vanishing-cream base. In 1942, Gurd, Ackman, Gerrie and Pritchard[2] likewise pointed out that an oil-in-water emulsion base for sulfonamides is more desirable. Diffusion studies by Waud and Ramsay[3] showed that fatty and paraffin bases do not readily yield sulfonamides. They also believe that water-containing bases make the sulfonamide content most readily available. Ackman and Wilson,[4, 5] also in 1942, described an oil-in-water emulsion base for a sulfonamide that, according to their observations, not only ensures constant delivery of the sulfonamide from the emulsion to the wound area but also favors proper drainage. Recently, Cochran[6] has shown that most sulfonamide ointments with a petrolatum base liberate only an inconsequential number of sulfonamides.

The present study was undertaken to evaluate the sulfonamide ointments and creams now usually prescribed from the standpoint of how readily the sulfonamides they contain are released from the base. If the heavy grease or waxy bases so often used in sulfonamide preparations yield little active drug to the tissues being treated, the therapeutic value of such preparations may be expected to be less than desired. Therefore, in choosing a sulfonamide preparation for topical application, a physician should consider whether it is likely to maintain the sulfonamide concentration in the tissues at an effective level. This study shows that great differences exist between ointment bases with reference to the amounts of sulfonamide liberated to an aqueous medium.

TABLE 1. *Constituents of Ten Ointment Bases.*

	Ointment	Percentage by Weight
Base 1.	All-grease base:	
	Petrolatum	95
	Sulfonamide	5
Base 2.	"Washable" jelly base:	
	Water	70.6
	Glycerin	18
	Pectin	6
	Sulfonamide	5
	Methyl parahydroxybenzoate	0.2
	Sodium bisulfite	0.2
Base 3.	Wax-oil base: white ointment (*U. S. P.*):	
	White petrolatum	85
	Sulfonamide	5
	White wax	5
	Wool fat	5
Base 4.	"Washable" oil-in-water base:	
	Mineral oil	64
	Water	23.45
	Beeswax	5
	Sulfonamide	5
	Triethanolamine	2
	Methocel	0.3
	Sodium bisulfite	0.2
	Aerosol OT	0.05
Base 5.	"Washable" oil-in-water base:	
	Water	71
	Cetosten	15
	Glycerin	5
	Sulfonamide	5
	Duponol C (principally sodium lauryl sulfate)	2
	White wax	2
Base 6.	"Washable" oil-in-water base:	
	Water	74
	Glycerin	10
	Cetyl alcohol	5
	Stearic acid	5
	Sulfonamide	5
	Amino Glycol (2-amino-2-methyl-1, 3-propanediol)	1
Base 7.	Bentonite base:	
	Water	85
	Bentonite (BC Volclay)	10
	Sulfonamide	5
Base 8.	Sulfonated hydrogenated castor-oil base:	
	Water	40
	Petrolatum	25
	Diglycol stearate	15
	Sulfonated hydrogenated castor oil	15
	Sulfonamide	5
Base 9.	Vanishing-cream base:	
	Water	65
	Stearic acid	15
	Glycerin	10
	Sulfonamide	5
	Tegin-P (propylene glycol monostearate)	4.15
	Triethanolamine	0.85
Base 10.	*U. S. P.* cold cream (modified base):	
	Peanut oil	54
	Water	19
	White wax	11
	Spermaceti	10.5
	Sulfonamide	5
	Sodium borate	0.5

METHOD OF STUDY

The method used was as follows. Six grams of each ointment, one sample containing sulfanilamide and the other sulfathiazole, was placed in a glass watchglass so that the ointment presented a smooth, flat surface. Each watchglass was placed in a 6-ounce, covered glass jar containing 100 cc. of distilled water; the jar was then incubated at 37°C. to

*From the Surgical Clinic, Peter Bent Brigham Hospital.
This work was supported by a grant-in-aid from the E. L. Patch Company, Boston.

†Junior associate in surgery, Peter Bent Brigham Hospital, and assistant in surgery, Harvard Medical School.

simulate body temperature, at or slightly below which the ointments are used clinically. Three such jars were set up for each ointment. At intervals of six, twelve, twenty-four, forty-eight and ninety-six hours, a 1-cc. sample of the water at a point 1 cm. above the center of the watch crystal was withdrawn and assayed for sulfonamide content. The Bratton–Marshall method of assay was used, employing an accurately calibrated Klett photoelectric colorimeter.

Table 1 shows the constituents of the ten ointment bases. It should be noted that use was made of one series containing 5 per cent sulfathiazole and another containing 5 per cent sulfanilamide.

Results

The results of these studies are summarized in the accompanying graphs (Fig. 1). Analysis of the data obtained revealed that the ten bases studied could be divided into two general groups, one comprising Bases 1, 3 and 10, which were found to yield little sulfonamide to the overlying watery medium, and the other comprising the remaining seven bases, which were found to yield large quantities of sulfonamides to the water. Since the differences in the values for the amount of sulfonamide liberated from the bases within each group did not seem significant, the results at each time interval were averaged for convenience in plotting. Bases 1, 3 and 10, which released little sulfonamide to the fluid in contact with them, are the heavy, greasy type that other investigators[1, 6] also found unsatisfactory as vehicles for applying sulfonamides locally. The amounts of sulfonamide released by these bases were so slight that, in plotting data for this group, the ordinate scale had to be made ten times larger than for the other group of bases so that the curves would be clearly visible. In contrast to the greasy bases, the oil-in-water emulsion bases and aqueous-jelly bases readily liberated large quantities of sulfonamides to the surrounding liquid. The results with the series of bases containing sulfanilamide in general paralleled those with the series containing sulfathiazole, but, as might be expected, the amounts of sulfonamide liberated ran higher for the sulfanilamide series than for the sulfathiazole series, and these differences were much greater for the bases of the oil-in-water emulsion and aqueous-jelly type than for the greasy bases.

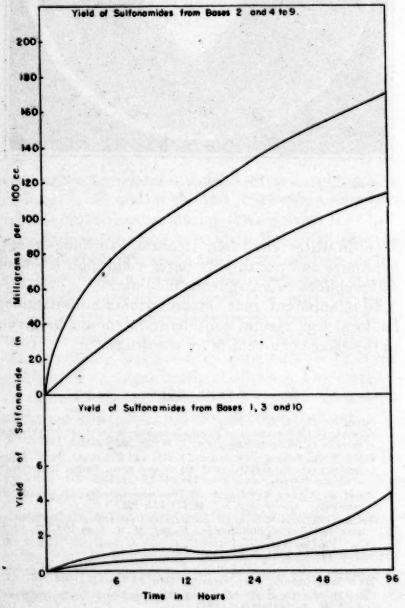

FIGURE 1. *Average Yield of Sulfonamides from Oil-in-Water Emulsion and Aqueous Jelly Bases (upper) and from Greasy Bases (lower).*

In each graph the upper curve represents the yield of sulfanilamide, and the lower curve that of sulfathiazole. Note that the ordinate scale for the upper graph is one tenth that of the lower graph.

Discussion

Sulfonamides applied locally can be expected to be therapeutically effective only if an adequate concentration of the drugs is maintained in intimate contact with the cutaneous lesion or wound under treatment. When a base so locks the sulfonamides suspended in it that the quantities released to a surrounding aqueous medium are so slight as to be practically negligible, it is extremely doubtful that this requirement will be met. Accordingly, it seems logical to avoid the all-grease or cold-cream type of base for the external application of sulfonamides if optimum therapeutic efficacy is to be realized. Besides obstructing the release of sulfonamides suspended in them, greasy bases have other disadvantages.[7, 8] First, they are not miscible with water or wound exudates. Secondly, it is difficult to bring about an adequate and uniform dispersion of insoluble drugs in bases of this type. Thirdly, their greasiness and stickiness are often objectionable to the patient. Finally, their removal is usually difficult and a frequent cause of pain.

The preparations, such as oil-in-water emulsions and aqueous jellies of the type made up with pectin or bentonite, that were found to liberate larger quantities of sulfonamides to an aqueous medium should, no doubt, be of greater value in local chemotherapy. One characteristic that these preparations have in common is miscibility with water. Hence, they serve to bring the medicaments they contain

in suspension into close contact with the infected area under treatment; moreover, they can be easily washed off.

Under certain conditions it is desirable to use a preparation having a lubricating effect and in others one having a drying effect. An oil-in-water emulsion provides better lubrication than does a pectin or bentonite jelly, and possesses the additional important advantage that it prevents dressings from sticking. The aqueous jellies tend to dry out rapidly and may prove especially valuable on moist lesions, such as those of impetigo.

The superiority of an oil-in-water emulsion base over an all-grease base as a vehicle for sulfonamides is also demonstrated by the results of agar-plate tests carried out with *Staphylococcus aureus* as the test organism. Figure 2 shows a marked zone of inhibition surrounding a preparation consisting of 5 per cent sulfathiazole suspended in an oil-in-water emulsion base (Base 4). In Figure 3, which shows the results when the same sulfonamide suspended in a petrolatum base (Base 1) is tested, no zone of inhibition is visible. The only apparent explanation for these differences is that the oil-in-water

FIGURE 2. *The Zone of Inhibition Surrounding 5 Per Cent Sulfathiazole in an Oil-in-Water Emulsion Base (Base 4).*

emulsion base readily releases its sulfonamides so that they can exert a bacteriostatic action on the bacteria in the surrounding agar medium, whereas the all-grease base acts as a barrier, keeping the sulfonamides away from the organisms.

SUMMARY

Heavy grease and cold-cream bases yield little sulfonamide to an aqueous medium.

FIGURE 3. *Lack of Zone of Inhibition with 5 Per Cent Sulfathiazole in a Petrolatum Base (Base 1).*

Oil-in-water emulsion, stearate vanishing-cream, bentonite and pectin-jelly bases yield high levels of sulfonamides to an aqueous medium.

It is apparent that, in prescribing sulfonamides for local use, careful consideration should be given to the choice of a vehicle for the drugs.

REFERENCES

1. Pillsbury, D. M., Wammock, V. S., Livingood, C. S., and Nichols, A. C. Local treatment of pyogenic cutaneous infections with sulfathiazole in emulsion base. *Am. J. M. Sc.* **202**:808-822, 1941.
2. Gurd, F. B., Ackman, D., Gerrie, J. W., and Pritchard, J. E. Practical concept for treatment of major and minor burns: importance of timing therein. *Ann. Surg.* **116**:641-657, 1942.
3. Waud, R. A., and Ramsay, A. Diffusion of sulfonamides out of certain bases. *Canad. M. A. J.* **48**:121-123, 1943.
4. Ackman, D., and Wilson, G. Surgical and gynecological experiences with emulsion of sulfathiazole. *Canad. M. A. J.* **46**:209-214, 1942.
5. *Idem.* Further experience with sulfathiazole emulsion. *Canad. M. A. J.* **47**:1-7, 1942.
6. Cochran, J. R. Clinical and laboratory evaluation of action of sulfonamide ointments. *Surg., Gynec. & Obst.* **79**:326-328, 1944.
7. Cole, H. N. Local use of sulfonamide compounds in dermatology *J. A. M. A.* **123**:411-417, 1943.
8. Aldrich, R. H., Savina, A. R., and Walsh, R. A. Local use of sulfonamides. *Indust. Med.* **13**:693-697, 1944.

MEDICAL PROGRESS

UNDESCENDED TESTICLE*

WILLIAM C. QUINBY, M.D.†

BOSTON

DISCUSSING the diagnosis and treatment of imperfect descent of the testicle Browne[1] relates an example of the advice given by various physicians to the parents of such a patient. They were told that an immediate operation must be performed if the child was not to be practically a eunuch; that they should wait for five years to see what happened; that the patient should be treated by hormone injections; that operation must on no account be done, since it was invariably unsuccessful; and that the testis was held up by a displaced vertebra that must be treated (this advice was given by an osteopath). On examination Browne found the patient normal.

Of course, such diverse forms of advice emphatically point to a wide lack of unanimity in the minds of practicing physicians, as well as in those of the lay public, regarding the significance of undescended testicle and the importance of its treatment before the onset of puberty. To judge from the indecision frequently found in the past histories of patients coming to a hospital for the relief of undescended testicle, it seems that during the six years that have elapsed since the above incident but small progress has been made toward a unanimous opinion regarding this problem. This is made especially evident in general surgical clinics by the fairly frequent cases of patients well past puberty coming for relief of undescended testicle, toward the correction of which nothing had yet been done because of earlier conflicting or vague medical advice. The statistics of Counseller[2] well illustrate this fact. Of 224 patients studied by him the average age was 19.5 years. Only 20 per cent of these patients were in the first decade of life, and 43 per cent were in the second decade. The rest were even older. It is therefore apparent that the facts that the undescended testicle cannot develop normally because of its faulty position and that correction of this defect in development can be successfully undertaken only at or before puberty are still frequently overlooked. Undoubtedly the pediatrician and the special clinics for children are on the whole well aware of these facts; not so, however, the general family physician.

PHYSIOLOGY

The testis is well known to have two functions — that of producing spermatozoa necessary for fertilization, and that of secreting a hormonal substance having an important role of action on the accessory reproductive organs, such as the prostate, the vas deferens and the seminal vesicles. The spermatogenetic function of the testis is not automatic but depends directly on the pituitary gland, the activity of which causes marked stimulation of the testicular cells. In the other direction spermatogenesis is impeded or inhibited by the absence of certain food vitamins, notably vitamin E, and is also unfavorably influenced by heat. It has long been known that the undescended testis (cryptorchid) fails to produce spermatozoa, and by ingenious experimental observations Moore[3] has shown that this depends on the peculiar heat sensitivity of the mammalian generative tissue. The temperature within the abdomen is three to five degrees higher than that within the scrotum, which by virtue of its thin skin, abundant sweat glands and absence of subcutaneous fat acts as a thermoregulator for the testis. Interesting examples of such a mechanism are also furnished by rodents, in whom the testes remain continuously within the abdominal cavity till just before and during the period of rut, at which time they descend into the scrotum. These facts adequately explain the failure of the undescended testis of man to mature and to produce spermatozoa. The second attribute of the testis, that of producing a hormonal substance by the activity of its interstitial tissue (Leydig's cells), is also probably interfered with by the lack of development caused by nondescent of the gland, although in most cases it is not entirely abolished.

A further factor in the problem of nondescent of the testis is found in its relation to the subsequent formation of neoplasms. For several years the opinion has been widely held that the undescended testicle is more prone to the subsequent development of a malignant tumor than is a normal one, and this applies to testicles that have undergone orchiopexy as well as to those that have not been operated on. Statistics concerning this point were either lacking or vague until a recent article by Gilbert,[4] who analyzed 5500 cases of testicular tumor in the literature. In these he found malignancy in 841 cases in which the testis was undescended, and in 63 of these the tumor involved a testicle that had previously been operated on. In 31 of the operated cases, the period between operation and the appearance of the tumor averaged twelve years. Gilbert points out that the 11 per cent incidence of malignant tumor in persons with

*From the Urological Clinic of the Peter Bent Brigham Hospital.

†Clinical professor of genitourinary surgery, emeritus, Harvard Medical School; acting urological surgeon, Peter Bent Brigham Hospital.

an undescended testicle is forty-eight times higher than would be expected by chance association. In patients having unilateral cryptorchidism the tumor is found to occur in the maldeveloped organ in 97 per cent of the cases.

It seems evident from this review that the previous feeling regarding potential malignancy of an undescended testicle is entirely borne out. It also becomes evident that every patient having an undescended testicle that has been operated on should be advised to submit to follow-up examination by a physician for not less than ten years.

Diagnosis

It is important to examine the question just what constitutes an undescended testis, in the sense that it is one that cannot be expected to reach its proper position in the scrotum spontaneously as growth progresses. Normally at birth each testicle can be palpated in the scrotum at some time or other, although frequently, owing to the action of the cremaster muscle when the child is crying or is cold, the testicle is drawn up out of the scrotum as far as the external inguinal ring. Here, because of the inguinal and suprapubic fat, the rather small testis may be difficult to demonstrate. Such cases are quite normal, and to them the term "migratory testicle" is applied. If on repeated examination, however, during the first two or three years of development a gonad can never be felt, it is to be assumed that it has failed to enter the inguinal canal for any distance and is therefore really intra-abdominal or cryptorchid.

Another variety of maldescent is also seen in which, although the testicle has progressed normally as far as the external inguinal ring, it has become deflected in its course, eventually stopping in some position not in the scrotum. To this type of case the term "ectopic testis" is applied. The most frequent abnormal position assumed by the ectopic testis is above and just external to the external inguinal ring. Here the organ lies in a more superficial position than normally and can usually be readily palpated but cannot be made to enter the scrotum. Such testes at operation are usually found to have a sufficient length of vas and blood vessels to reach the scrotum, but the testis has become turned upward out of its normal course. In other, much rarer cases of ectopia the testis is found as far from its normal position as the perineum or in front of the pubic bone. In the differentiation of these various forms of testicular undescent Browne[1] makes the following distinctions. The testis that can be easily seen through the skin anywhere except in the scrotum is ectopic. A testicle in the inguinal canal cannot be felt through the skin. Conversely, a testicle that can be felt is not in the inguinal canal. The testis is never drawn into the inguinal canal by the cremaster muscle, but only as far upward as the external ring. In 70 per cent of cases of imperfect descent of the testicle there is also a congenital inguinal hernia due to failure of the processus vaginalis of the peritoneum to close. Whether or not the presence of this accompanying maldevelopment causes interference with the normal descent of the testis is not entirely clear. It does, however, form an added reason for operative intervention.

The testis retained within the abdomen, and thus truly cryptorchid, represents the most marked degree of the anomaly and can rarely be expected to traverse the canal to reach the scrotum through normal growth. Also, the ectopic testicle, having been deflected from its normal course, experiences a definite mechanical hindrance to normal development. Each of these varieties demands operation. On the other hand, the migratory testis, being in the normal line of descent, often reaches its proper position spontaneously with added bodily growth or can be caused to do so by endocrine therapy.

Endocrine Treatment

For several years the stimulating effect of various endocrine substances on the growth of the testis has been employed in an endeavor to promote the undescended organ to further downward migration. In the main there are three varieties of substance having gonadotropic action — a gonadotropin from the pituitary gland (pituitary gonadotropin), one obtained from the blood serum of pregnant mares (equine gonadotropin) and one produced from the urine of pregnant women (chorionic gonadotropin). Of these the last is much more potent than either of the others in its ability to cause stimulation not only of the testicle but also of the body as a whole, especially as regards the appearance of the secondary sex characteristics of puberty, and is therefore the substance usually employed.

Describing their experience with chorionic gonadotropin, Thompson and Heckel[8] found a rapid increase in height and weight associated with genital development. They state that in many patients in whom a hormonal deficiency is present the testes descend at the time of puberty without any further treatment. Careful study of data has shown that glandular therapy by endocrine substances causes descent only of those testes that would have descended at the time of puberty without treatment. It is thought, however, that glandular treatment of the undescended testis is important for three reasons. First, since the testis cannot function properly except within the environment of the scrotum, it is to be supposed that the earlier it reaches this normal environment the greater is its chance of normal spermatogenesis at puberty. Secondly, glandular therapy makes it possible to determine at an early age whether there exists some mechanical hindrance to normal descent. Thirdly, even though glandular therapy may be ineffective in causing descent of the testis, it facilitates subsequent orchidopexy by growth of the parts to be operated on.

Thompson[6] believes that most reports of the clinical results of glandular therapy of cryptorchidism are overenthusiastic. Others claim successful results in over 60 per cent of the cases treated, whereas his patients show a favorable outcome in less than 25 per cent. He advises giving the chorionic gonadotropin in doses of 500 international units three times a week for two months. If there has been no favorable effect by that time, operation is indicated.

Harding[7] reports the results of endocrine treatment in 38 cases. There were good results in 34 cases, of which 29 showed complete descent and 5 partial descent. He compares these results with those following operation, which he states were good in only 50 per cent of the cases. In summary, he states that cryptorchidism without mechanical obstruction can be corrected by hormonal therapy. Since it is difficult to diagnose those patients having mechanical obstruction, endocrine treatment by its failure makes a structural impediment evident, so that operation can be undertaken at a period before the onset of puberty. Harding also believes that operation is aided by the enlargement of the parts under endocrine therapy even though it does not cause complete descent.

Lapin, Klein and Goldman[8] discuss the results of endocrine treatment of 200 boys, 39 of whom have been followed for two to nine years. Of these only 6 were considered to show a successful result. They believe, however, that this form of treatment is fully justified in all cases in which the testis cannot be demonstrated to be ectopic. The optimum age for such treatment is at or before fourteen years. It may also be wise to use endocrine therapy as a postoperative measure to hasten testicular growth after the organ has been placed in the scrotum.

Cone[9] relates his experience with undescended testis. He thinks that endocrine treatment has but a small field of usefulness, is practically unnecessary and may be harmful in that it may cause general glandular (pituitoadrenothyroid) imbalance. He divides these cases into three groups — endocrinopaths of the Fröhlich type with retained testes, those having ectopia of the testis and those with the testicle in the inguinal canal or with abdominal retention. For the cases in the first group, which form only 3 per cent of his cases, hormonal treatment is definitely indicated. For the second he advises surgical repair of the ectopia at any convenient age, hormonal treatment being futile. The third group comprises 90 per cent of the cases. These patients should be kept under observation until puberty is imminent at thirteen to fourteen years of age and operated on if the testis has shown no spontaneous descent.

Dosage

The dose of chorionic gonadotropin advocated by most writers is 12,000 international units administered over a period of about two months. It is thought that if no significant change has resulted from this amount it is useless to persist with endocrine treatment. Overdosage with so potent a material as chorionic gonadotropin must be avoided because of its effect on organs other than the testicle, primarily those of the accessory genital group. In this regard the case reported by Powell[10] of enlargement of the prostate following persistent treatment by gonadotropic hormone is noteworthy. It appears that the precocious union of the bony epiphyses, thought at an earlier time to be a possible contraindication to the use of endocrine substances, does not occur if the dosage is properly controlled.

Surgical Treatment

All surgeons agree that the testicle that at puberty has failed to descend spontaneously or by endocrine therapy should be placed in the scrotum if possible. The optimum age for operation is agreed by most surgeons to be just before or at puberty — some time before the fourteenth birthday. At this age sufficient growth has taken place to make the dissection of tissues easier than during the earlier years. Occasionally, because of complicating factors usually related to the accompanying hernia, operation may be undertaken somewhat earlier.

The standard type of operation is well described and illustrated by Ladd and Gross.[11] All adhesions of the spermatic cord and vas to surrounding structures must be carefully freed, special care being taken to avoid injury to the arterial blood supply. After this has been accomplished the testicle should lie in the scrotal sac without tension. It is held there by elastic traction attached to a suture penetrating the scrotum at its lowest point and later attached to the thigh. The hernia is then repaired by the Ferguson method.

In some cases in which the scrotum itself is poorly developed or is even normal, the union of the scrotum to the skin of the adjacent thigh, while within it the testis is sutured to the fascia lata, according to the method of Thorek, is advised. This false union is repaired after the scrotum and its enclosed testicle have thus been subjected to traction for a sufficiently long period, usually a month. This was the type of operation employed in over 60 per cent of the cases studied by Counseller.[2]

In the few cases in which it is surgically impossible to place the testis in the scrotum without undue tension on its vascular supply, the danger of subsequent tumor formation, as noted by Gilbert,[4] makes removal of the testicle imperative. In other words, an undescended testicle should either be placed in the scrotum or excised.

References

1. Browne, D. Diagnosis of undescended testicle. *Brit. M. J.* 2:168-171, 1938.
2. Counseller, V. S. Ten years' experience in management of cryptorchidism. *J. Urol.* 46:722-731, 1941.

3. Moore, C. R. Physiology of testis and application of male sex hormone. *J. Urol.* **47**:31-44, 1942.
4. Gilbert, J. B. Studies in malignant testis tumors. V. Tumors developing after orchidopexy. *J. Urol.* **46**:740-747, 1941.
5. Thompson, W. O., and Heckel, N. J. Endocrine treatment of cryptorchism. *J. A. M. A.* **117**:1953-1956, 1941. Sex hormones: clinical application. *Rhode Island M. J.* **24**:145-148, 1941.
6. Thompson, W. O. Clinical use of extracts from testes and of synthetic products having similar actions. *J. A. M. A.* **125**:15-19, 1944.
7. Harding, F. E. Treatment of cryptorchidism. *J. Pediat.* **23**:451-462, 1943.
8. Lapin, J. H., Klein, W., and Goldman, A. Cryptorchidism. *J. Pediat.* **22**:175-188, 1943.
9. Cone, R. E. Surgical management of cryptorchidism. *Ann. Surg.* **119**:591-594, 1944.
10. Powell, T. O. Precocious hypertrophy of prostate following persistent treatment with gonadotropic hormone. *J. Urol.* **41**:206-209, 1939.
11. Ladd, W. E., and Gross, R. E. *Abdominal Surgery of Infancy and Childhood.* 455 pp. Philadelphia: W. B. Saunders Company, 1941. Pp. 371-384.

Additional References

Abrahamson, R. H. Combined surgical and physiologic treatment of cryptorchidism. *Arch. Surg.* **44**:170-186, 1942.
Editorial. Evaluation of methods of treatment of cryptorchidism. *Surg., Gynec. & Obst.* **72**:940, 1941.
Iason, A. H. Cryptorchidism. *Am. J. Surg.* **65**:353-360, 1944.
Moore, C. R. Physiology of the testis. In *Glandular Physiology and Therapy.* 570 pp. Chicago: American Medical Association Press, 1942.
Rea, C. E. Histologic character of undescended testis after puberty; its significance with reference to performance of orchidopexy. *Arch. Surg.* **44**:27-34, 1942.
Wells, L. J. Hormones and descensus testiculorum. *Bull. Minnesota M. Found.* **4**:50-54, 1944.

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Weekly Clinicopathological Exercises

FOUNDED BY RICHARD C. CABOT

TRACY B. MALLORY, M.D., *Editor**

BENJAMIN CASTLEMAN, M.D., *Acting Editor*

EDITH E. PARRIS, *Assistant Editor*

CASE 31241

Presentation of Case

A twenty-one-year-old man was admitted to the hospital because of dyspnea.

He had been a long distance runner and in good health until approximately one year before admission, when he began to have a severe cough, which was worse in the early morning and was productive of thick, nonodorous yellow sputum. He noticed wheezing in his chest and became dyspneic after climbing one flight of stairs. The wheezing progressed, and he became dyspneic at rest and when lying down. He was unable to sleep well but obtained no relief from the use of more than one pillow. For several months he had been treated for bronchitis. His cough and dyspnea progressed slowly. He had frequent night sweats and occasional flecks of blood in the sputum.

Five months before admission he came to the medical unit of the Out Patient Department, where loud musical rhonchi were heard throughout both lung fields. Occasional episodes of gallop rhythm and premature beats were heard. The blood pressure was 120 systolic, 98 diastolic. The temperature was normal, the pulse 114, and the respirations 24. An x-ray film of the chest showed marked dorsal scoliosis without evidence of bone pathology. The lungs were clear, and the heart appeared normal. A white-cell count was 17,000. A diagnosis of asthma was made. Four months before admission to the hospital, tests for all common allergens were negative. These tests were repeated two months later, at which time strongly positive reactions were obtained to ragweed and mixed Alternaria and weakly positive ones to dog hair and Penicillium. A program of desensitization against ragweed and Alternaria was begun, and the patient felt somewhat better for a week after each injection. One week before admission he developed marked swelling of the ankles, and on the day before entry his sputum became frothy. At 3 a.m. on the day of admission he was awakened by a sharp shooting pain in the low midabdomen, which was worse when he changed position. He came at once to the Emergency Ward and obtained prompt relief from morphine. During the morning he became hoarse. He experienced no chills, fever, cyanosis, palpitation or chest pain. His appetite had been poor during recent months.

He had had measles and whooping cough but no other illnesses. The scoliosis was first noticed at the age of eleven without a concomitant illness. His parents and two sisters were living and well.

Physical examination revealed a thin, markedly dyspneic and cyanotic man with a pronounced right dorsal, left cervical and left lumbar scoliosis, with rotation of the vertebral column and winging of the right scapula. The skin was cool and covered with perspiration. There was an area of subconjunctival hemorrhage in the left eye. The pupils were pinpoint and did not react (post-morphine effect). The voice was hoarse and feeble. The neck veins were slightly distended. The heart appeared enlarged to the left and to the right. The rate was 120 and regular, and there was no pulse deficit. A diastolic rumble and thrill were thought to be present over the apex, but auscultation was difficult. Expiration was greatly prolonged. The chest was filled with high-pitched musical rales and coarse crackles on inspiration, with rhonchi, groans and wheezes on expiration. Dullness at the bases and splashing noises on respiration suggested pleural effusion. The abdomen was slightly protuberant, with signs suggesting some fluid; it was tender in the right lower quadrant. The liver was felt four fingerbreadths below the costal margin; it was slightly tender. The spleen was not felt. There was marked edema of the ankles. The femoral pulsations were normal.

*On leave of absence.

The temperature was 100°F., and the respirations were 35. The blood pressure was 150 systolic, 100 diastolic.

Examination of the blood showed a red-cell count of 4,750,000 and a white-cell count of 17,700, with 56 per cent neutrophils, 15 per cent lymphocytes, 17 per cent monocytes and 11 per cent eosinophils. Toxic leukocytic granules were prominent on the stained smear. The urine gave a green reaction with Benedict's solution but was otherwise negative. An electrocardiogram showed sinus tachycardia at a rate of 120, with a PR interval of 0.16 second. There was a normal axis, with deep S_1 and S_4 and a broad shallow S_3; QRS was 0.09 second; the T waves were upright, and the ST segments normal.

The patient was treated for congestive failure but soon became unresponsive. His breathing became more shallow, and he expired in respiratory failure approximately twenty hours after admission.

Differential Diagnosis

Dr. Francis M. Rackemann: I should like to take the last part of this story first and point out that this man died in respiratory failure, which I assume means an increasing respiratory rate, with shallower breathing, and the heart still beating when the end came. That fact, with progressive asthma and the typical chest findings, indicates death from asthma, and I should expect that Dr. Castleman found lungs with pale grayish surfaces and the plugging of the small bronchi. What about the heart? Was there a cor pulmonale? The heart was enlarged, the veins were full, the liver was low, and he had edema of the ankles. He had been treated for congestive failure. On the other hand, the electrocardiogram showed a normal axis. Furthermore, the heart continued to beat; if therefore he did have cor pulmonale, he did not die of it. He could have had a chronic cor pulmonale, and I believe that the right ventricular wall was found dilated and the wall thickened. A diastolic thrill is described. In such cases one can feel with the hand rales of all sorts in the chest, and rales and thrills are easily confused.

This first x-ray film was taken five months before death. It is a lateral view and shows distortion of the spinal column. The lungs are clear, the peribronchial areas are clear, and the diaphragm is low. And that goes along with the idea that he had asthma. I am quite ready to say that he died of asthma, and that he presented the typical findings.

What kind of asthma did he have and what caused it? The onset at the age of twenty means, other things being equal, that it was due fundamentally to allergy. He had been treated with ragweed and mixed Alternaria extract. Good physicians would not treat him with these things unless there was clinical evidence that the asthma was worse in the fall of the year than in the ragweed season. The precise dates are always important in the history of asthma. I should like to speculate and suggest that in this story I can supply the dates even though they are not given in the abstract. I should say that this man probably died in September or early October. This makes the onset one year previously also in September, and that fits the ragweed idea. Five months before entry, when he first came to the Out Patient Department, means April, and so the skin tests were done in May. Treatment was started in July, which is a little late perhaps for best results. I shall say that the asthma was of extrinsic origin and dependent on hypersensitivity to ragweed and molds and possibly to dogs as well.

There are other factors in this picture. From the x-ray films you can see that he had scoliosis, and that means two things to me. He was a long distance runner until a year before he came here. Therefore, he was either not much of a runner or the scoliosis was not too troublesome. I have read somewhere that scoliosis predisposes to tuberculosis, and the fact that he had scoliosis makes one wonder if he had the disease. Against it is this x-ray film of the chest, taken in April. I cannot see the apices. Can you rule out tuberculosis from this film, Dr. Schulz?

Dr. Schulz: I do not believe that I can rule it out. I can say that there is no evidence of it. The apices are obscured by the deformity.

Dr. Rackemann: I am going to rule it out anyway, and I am also going to rule out tumor. There is not much reason to think about tumor here.

The second point about scoliosis is that it makes asthma worse, perhaps because the cramping of the chest interferes with the compensatory hypertrophy or emphysema of the lungs. Dyspnea is increased by scoliosis.

There are a number of little bothersome things in the story. In the first place, on the day before death he developed frothy sputum. Asthmatics do not do that often. I do not believe that he died of acute heart failure.

Then, on the day of death he came to the Out Patient Department at 3 a.m. complaining of pain in the abdomen that woke him suddenly from sleep. That was very unusual so far as he was concerned; it was a new thing. Nothing is said about vomiting with the abdominal pain, and he had no fever when he was seen. He was given morphine, which I think would not have been given if it was thought that he had appendicitis. The picture does not sound like appendicitis. It is not like kidney stones. But I think it does sound like mesenteric thrombosis or at least a vascular episode. So please note that. He had a subconjunctival hemorrhage. That also connotes a vascular disturbance. He had some evidence of fluid in the chest and fluid in the abdomen. The numbness in the fingers and arms might have

been due to vascular lesions of the nervous system. All these things put together compel one to consider periarteritis nodosa, in spite of the fact that all the evidence for this diagnosis occurred in the last twenty-four hours. There is one more point — he had a leukocytosis, first noted five months before he died, and again at the end. That one count five months previously was out of place. Why should he have had a count of 17,000 five months before death? The figure is perfectly compatible with periarteritis nodosa, and the 11 per cent eosinophilia also fits in with the idea, although in the fatal cases of periarteritis nodosa observed in this hospital the percentage of eosinophils was much higher. In the sema and plugs in the bronchi; possibly there were areas of old tuberculosis, and perhaps there was fluid in the pleural and peritoneal cavities, which does not go with the asthma but goes with the periarteritis. Secondly, I believe that he had chronic cor pulmonale that was not fatal, and finally that he had periarteritis nodosa that was probably of five months' duration and that was diagnosable only in the last twenty-four hours. I believe we shall find lesions in the heart and on the pleural surface of the lungs, and I shall throw in the kidneys, even though he did not have red cells in the urine.

DR. J. H. MEANS: I wonder if this man really had fluid in the chest and whether he had a pneumo-

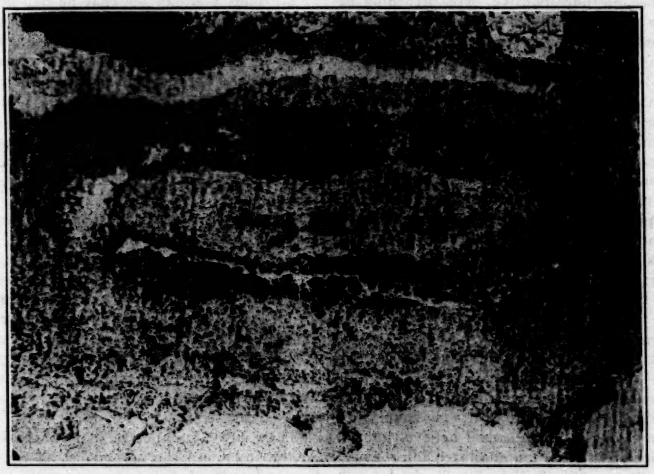

FIGURE 1. *Photomicrograph of a Vascular Lesion in the Lung.*

eight cases of periarteritis nodosa which Dr. Greene and I* put together in 1939, all had a leukocytosis of 16,000 or over, and the eosinophils were at least 25 per cent.

From two hundred and twenty-nine references in the literature, however, Dr. Greene found only 19 cases that had asthma and periarteritis at the same time. Of the 19, only 12 had a high eosinophilia. In periarteritis nodosa without asthma, only 15 cases had an eosinophilia. Our patient here had only 11 per cent eosinophils in a white count of 17,000, but evidently that is enough for the diagnosis.

In conclusion, I shall say that this man had asthma, with typical pathology, including emphysema and plugs in the bronchi; possibly there were areas of old tuberculosis, and perhaps there was fluid in the pleural and peritoneal cavities, which does not go with the asthma but goes with the periarteritis. Secondly, I believe that he had chronic cor pulmonale that was not fatal, and finally that he had periarteritis nodosa that was probably of five months' duration and that was diagnosable only in the last twenty-four hours. I believe we shall find lesions in the heart and on the pleural surface of the lungs, and I shall throw in the kidneys, even though he did not have red cells in the urine.

DR. J. H. MEANS: I wonder if this man really had fluid in the chest and whether he had a pneumohydrothorax. I wonder what evidence Dr. Rackemann had for the statement about the fluid in the chest.

DR. RACKEMANN: I did not have good evidence; it was simply because of the splashing noise and the dullness at the bases.

DR. MEANS: If the splashing was due to effusion in the chest he must have had air in there also, and probably in his stomach.

DR. RACKEMANN: That is correct. I am not too fussy about the point. Whether or not he had fluid would not change my opinion. It is only one of several items.

DR. WYMAN RICHARDSON: I was wondering if the morphine had anything to do with his death.

DR. RACKEMANN: I should say that it had.

*Rackemann, F. M., and Greene, J. E. Periarteritis nodosa and asthma. *Tr. A. Am. Physicians* 54:112-118, 1939.

Clinical Diagnoses

Cor pulmonale, with congestive failure.
Bronchial asthma.

Dr. Rackemann's Diagnoses

Periarteritis nodosa.
Bronchial asthma, extrinsic.
Cor pulmonale, chronic.
Scoliosis.

Anatomical Diagnoses

Periarteritis nodosa, involving especially the heart and lungs.
Bronchial asthma.
Cor pulmonale.
Bronchopneumonia.

Pathological Discussion

Dr. Benjamin Castleman: The autopsy on this young man showed that he did not have fluid in the chest or in the abdomen. The lungs were covered with small nodules, and scattered throughout both lungs within the parenchyma were similar nodules 4 to 5 mm. in diameter. There were no bronchial plugs to suggest that he died in an asthmatic paroxysm, although I am reasonably sure that he had had asthma. In the pericardium there was about 350 cc. of brownish, somewhat turbid fluid, with a granular exudate over the epicardium. A few small grayish-white nodules were also found over the peritoneum, liver and kidneys. Certainly he had all the gross characteristics of miliary tuberculosis, and for that reason we fixed everything in formalin to guard against spreading the bacilli. The heart weighed 280 gm. and was not hypertrophied. The right wall measured 5 mm., indicating definite hypertrophy. The myocardium was pinkish gray throughout, with many soft areas, and we thought that that also was a manifestation of this widespread tuberculous process. Microscopic sections, however, proved that it was not tuberculosis. The histologic preparations showed an unusual lesion.

Each one of the nodules observed grossly in the heart and lungs proved to be a zone of inflammatory and granulomatous reaction in the center of which was a partially destroyed artery (Figs. 1 and 2). The lesions varied considerably, some being very acute and others in their subacute or healing stages. Practically every involved vessel showed partial to complete necrosis of its wall and infiltration with neutrophils, eosinophils, plasma cells and lymphocytes, not only of the wall of the vessel but of a wide zone beyond the adventitia. Many of the vessels were thrombosed and in these, especially within the lumen along the destroyed intima, was an extensive granulomatous reaction with numerous foreign-body giant cells. In the heart muscle there was an extensive eosinophilic infiltration not in direct relation to vessels, which possibly represents early infarction resulting from some of the thrombosed arteries. The granulomatous reaction was so prominent that for some time we were considering this case as one of an obscure infection; the almost con-

Figure 2. *Photomicrograph of a Vascular Lesion in the Heart.*

stant relation of a blood vessel to each lesion, however, justifies a diagnosis of periarteritis nodosa. Similar but less numerous lesions were found in most of the other organs, such as the gall bladder, adrenal glands, liver and kidneys.

It is interesting to speculate about the relation of the asthma and the periarteritis nodosa. We know that it is seen in people who have become allergic to an antigen of some sort. I do not know what could have happened while he had his asthma, but whatever it was it might have started him off on the road to periarteritis nodosa.

DR. CHESTER M. JONES: Had he had any chemotherapy, any sulfonamides?

DR. CASTLEMAN: Not so far as I know.

DR. RACKEMANN: Is it not fair to regard periarteritis nodosa as a pathological picture that occurs in the progress of this disease? When the so-called "toxic factor," whatever that is and however it is concerned with the allergy, reaches a certain point, it produces the peculiar lesions in the blood vessels that we call periarteritis nodosa. I do not believe that the word necessarily means a disease in itself. It is an episode in the course of disease.

CASE 31242

PRESENTATION OF CASE

A forty-three-year-old longshoreman was admitted to the hospital because of shortness of breath.

He was well until six weeks before entry, when he first began to note shortness of breath and weakness of the back and legs on climbing stairs and ladders. At about the same time he began to have a dry cough, especially after exertion. He was told that he had bronchitis and was treated with medicines, which afforded no relief. He had had slight hemoptysis on two occasions. Three weeks before admission he became sleepless and orthopneic, requiring three pillows. He had frequent night sweats. A week later he noted pain in his knees and thighs, but no swelling or redness. He also experienced a mild low substernal pain. The dyspnea and weakness had progressed to such a degree that, at the time of admission, he could not dress himself. During the six-week period of illness he had lost 15 pounds; he had had to quit his job two weeks after the onset of his illness.

At the age of four he had scarlet fever. He had not had rheumatic fever or any other severe illness. Four years before the present illness he had submitted to an Army physical examination and had been found to be in excellent health.

Physical examination revealed a slightly pale man with rapid, shallow labored breathing and limited chest expansion. The tongue was dry and red. There was no clubbing of fingers or toes. The neck veins were large but not pulsating. Fine moist rales were heard all over the chest, anteriorly and posteriorly. No murmurs were heard. The heart was not enlarged. The aortic second sound was equal to the pulmonic. The abdomen showed some voluntary spasm, and the abdominal wall was "sore" from much coughing. Rectal examination revealed a normal prostate. Neurologic examination was negative.

The temperature was 99°F., the pulse 100 and regular, and the respirations 28. The blood pressure was 118 systolic, 75 diastolic.

Examination of the blood showed a red-cell count of 6,100,000, with 17.0 gm. of hemoglobin. The white-cell count was 9700, with 54 per cent neutrophils, 12 per cent lymphocytes, 27 per cent eosinophils, 6 per cent monocytes and 1 per cent basophils. The red cells and platelets appeared normal. The urine specific gravity was 1.030, and the pH 5.2. The sediment contained 3 red cells and 1 to 3 white cells per high-power field, with an occasional hyaline or granular cast. A stool was formed, dark and guaiac negative. Repeated smears of the sputum showed no tubercle bacilli. The serum nonprotein nitrogen was 37 mg. per 100 cc., the calcium 9.0 mg., the phosphorus 3.0 mg., and the cholesterol 205 mg. The protein was 4.98 gm. per 100 cc., with an albumin-globulin ratio of 1.8. The alkaline phosphatase was 16.6 units per 100 cc., and the acid phosphatase 3.3 units. A cephalin flocculation test was negative in forty-eight hours. The carbon dioxide and chloride levels were normal. The blood Hinton test was negative. An electrocardiogram on the first day showed a normal rhythm of 100, a PR interval of 0.17 second, and a flat and diphasic T_3, an inverted T_2, a deep S_2 and inverted T waves in CF_2, CF_4 and CF_5. At the same time an x-ray film of the chest showed extensive density of a rather unusual pattern in both upper lung fields and in the central portions of the left lower lung field (Fig. 1). The heart did not appear enlarged. The left diaphragm was slightly elevated, and there was mild scoliosis of the thoracic spine.

On the third day marked variation of pulse and heart rate and sounds were noted on expiration. The pulse slowed and weakened during inspiration. A diastolic gallop at the apex and an inconstant diastolic scratchy murmur over the pulmonic area were heard. The respiratory rate rose to 40 for twenty-four hours on the third day, then returned to the former rate of approximately 30. Sputum cultures for streptococci, pneumococci and fungi were negative. The venous pressure and the circulation time were normal. Repeated tuberculin and trichinella skin tests were negative. Re-examination of the chest fluoroscopically and additional films on the fourth day showed no appreciable change in the extensive increased density that involved both lung fields. Further x-ray studies one week after admission showed a normal intravenous pyelogram. A film of the abdomen showed no soft-tissue masses and a normal-sized liver and spleen. Throughout

the bones of the pelvis there were scattered nodules of increased density. A gastrointestinal series with the patient in the horizontal position showed the esophagus to be normal. The mucosal folds of the stomach were greatly swollen (Fig. 2). An area of rigidity was seen just below the cardia on the lesser curvature for a length of 8 to 10 cm. On the spot films there seemed to be a shelf at the upper and lower edges of this lesion. A Graham test faintly outlined a normal-appearing gall bladder.

On the eighth day the patient spat up 10 cc. of blood, which he stated came from his nose. A gastric analysis after histamine showed 9.9 units of free acid and 17.5 units of total acid. The sediment contained numerous polymorphonuclear leukocytes and was negative for tubercle bacilli. Repeated stool examinations showed +++ guaiac tests. The hemoglobin was unchanged. Successive differential counts showed the eosinophils to vary from 9 to 24 per cent.

The patient became progressively weaker and more dyspneic. During the third week the temperature rose slowly to 101°F., the pulse to 120, and the respirations to between 40 and 50. The urine and blood were unchanged. The peripheral lymph nodes were thought to be enlarged. Respiration became more labored, and without a terminal episode, the patient expired on the twenty-second hospital day.

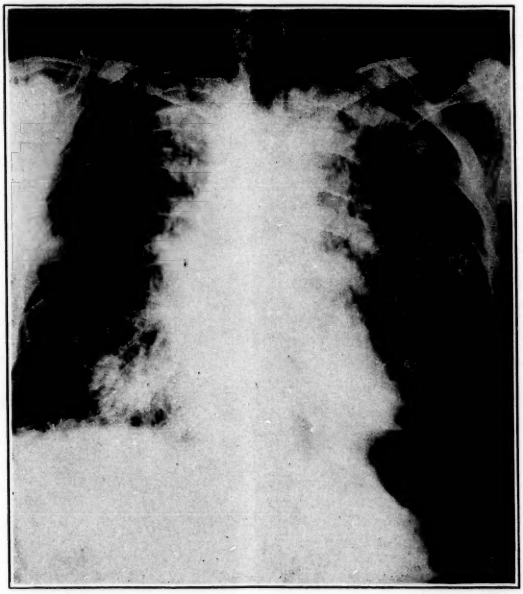

FIGURE 1. *Roentgenogram of Chest Showing Extensive Density of an Unusual Pattern.*

DIFFERENTIAL DIAGNOSIS

DR. WYMAN RICHARDSON: The story is that of a relatively young man with an acute illness lasting four weeks.

Is it fair to look at the temperature chart? I was quite interested to know whether he had a high plateau type of fever or one that went up and down.

DR. BENJAMIN CASTLEMAN: You may see it. It is not striking.

DR. RICHARDSON: The fever apparently started off gently and really never did get particularly high. It was not a septic temperature.

First of all I want to run over some of the findings. The primary symptoms were pulmonary, and there was slight hemoptysis early in the disease. I think that this is worth emphasizing. He had night sweats. This is also worth emphasizing. The urine was essentially negative. It contained a few blood cells but no albumin. Several sputum examinations were done; but the story was that of an unproductive cough and there is nothing to suggest that what he was bringing up was really sputum. The alkaline

phosphatase was elevated, and this suggests bone disease with osteoblastic activity. The murmur in the pulmonary area could possibly have been due to pericarditis, or to pleuritis from the overlying lung, or it may not have been significant at all. Tuberculin tests were negative. Repeated tests with trichinella antigen were also negative. There was pus in the gastric contents, an observation not frequently made, perhaps because it is not looked for.

Perhaps we should see the x-ray films at this time.

DR. SCHULZ: Not quite like it, although somewhat approaching it. The findings in this film in association with the increasing dyspnea make one think about lymphatic spread of tumor, especially in view of the areas of increased density evident in the bones.

DR. RICHARDSON: Let us look at the bones.

DR. SCHULZ: There are many round areas of increased density in the pelvis that look like osteoblastic reaction to metastases. Similar bone lesions can be seen in lymphoma.

FIGURE 2. *Roentgenogram of Stomach Showing the Swollen Rugal Folds.*

I am interested in the lesion in the stomach and the appearance of the chest, as well as some of the bone lesions.

DR. MILFORD D. SCHULZ: The films of the chest show extensive, symmetrically distributed mottled and stringy areas of increased density spreading into both lung fields. These go all the way out to the periphery of the lung fields and seem to be most prominent near the lung roots (Fig. 1). It ushers in as possibilities a whole group of lesions that includes lymphatic spread of tumor, fibrosis, miliary tuberculosis, sarcoid and others.

DR. RICHARDSON: You never see an x-ray of the chest like that with periarteritis nodosa, do you?

DR. RICHARDSON: Do you see areas of osteolytic activity?

DR. SCHULZ: I do not believe so. I think that they are osteoblastic.

DR. RICHARDSON: With widespread tuberculosis in the bone is there osteoblastic activity or is it mostly a destructive process?

DR. SCHULZ: I have never seen it look like this.

DR. RICHARDSON: This is, of course, a miliary process.

DR. SCHULZ: The fluoroscopist observed greatly swollen rugal folds. The films of the stomach show an area of rigidity along the lesser curvature, and this is quite constant on the spot films. No actual

tumor mass is seen, but there is ulceration of the mucosa along the rigid part of the stomach.

DR. RICHARDSON: I want to play down that lesion.

DR. SCHULZ: These swollen rugae are reminiscent of a case presented at this conference several years ago that proved to be merely gastritis with infiltration of the stomach wall.[1] Lymphoma of the stomach can also have this appearance.

DR. CHESTER M. JONES: Would you be willing to say that this was not an extraluminal gastric lesion, but that it was in the mucosa.

DR. SCHULZ: On the basis of these films I do not believe that one can tell.

DR. RICHARDSON: Now for the diagnosis. If one takes the eosinophilia seriously what does one have to consider? I am not going through all the possibilities, but some of them have to be considered seriously.

I do not know much about Loeffler's syndrome, but it has to do with a pneumonitis and a high eosinophilia. It is relatively acute and benign. I am not up on the literature, but in cases coming from the Mediterranean area I have seen mention of eosinophilia and chronic pneumonitis that lasted for a year or more. I do not believe that any of these cases had an acute fulminating process of this sort. I have seen one patient in this hospital who had an eosinophilia with lesions in the lung, a picture that suggested to me Hodgkin's disease. In the course of a year, however, all the lesions disappeared, as did the eosinophilia, and the patient made a spontaneous recovery. In the present case the disease seems to me to be too widespread and too quickly fatal to consider this group, and therefore I cross them out.

I think that one can make out a good case for periarteritis nodosa, whatever that may be. It is a clinical hodge-podge when one tries to make of it a clear-cut clinical picture. This case does not follow the pattern that one encounters in the asthmatic type. There is no peripheral neuritis, no mesenteric thrombosis, no renal symptoms, and only slight evidence of any actual coronary involvement. Furthermore, I do not believe that we see such a chest picture in the usual type of periarteritis nodosa. It seems to me that the course is too acute for a case of periarteritis nodosa, and in spite of the eosinophilia I am going to throw that diagnosis out. Also, bone lesions would be extremely rare with periarteritis nodosa.

Trichinosis can be fatal. When it is, I believe that it would cause a typhoid-like picture, which this patient did not show. There may be central-nervous-system involvement in fatal cases. Two skin tests were negative. If one is going to pay any attention to such tests it seems to me that they should have been positive in this case. I am going to rule it out.

Tumor seems to me the logical diagnosis in this case. There is widespread disease involving bone, with lesions that Dr. Schulz says are consistent with metastatic tumor of the bone. There is a lesion in the stomach, and one can logically say that this patient had a tumor of the stomach with widespread metastases, or possibly primary tumor in the lung, with metastases elsewhere. Eosinophilia with tumor involving the lung is sometimes observed. I saw a case not so long ago with eosinophilia due to bone metastases from a pancreatic tumor, but if one is going to suggest tumor as a cause for eosinophilia there should be an accompanying anemia and changes in the blood characteristic of widespread bone-marrow involvement. This man had no anemia, in fact he had a polycythemia, probably due to a certain amount of dehydration and possibly accentuated by some anoxemia, although he is not described as being cyanotic. I do not get the feel from this case that it was a malignant tumor. It was rapidly fatal without any of the really good localizing signs or symptoms that one would expect with a rapidly fatal tumor. It is the kind of death that one might expect from acute leukemia. Nothing suggesting this was observed in the blood smear. Then we have the lymphoma group. It is rare to see a case as quickly fatal as this in any of the lymphomas, unless one includes acute leukemias, which I have already mentioned.

The whole picture to me is that of infection, and whereas I say that tumor is the logical diagnosis, I am going to throw that out also. It may be an infection that I know nothing about or that I have not thought of, in which case there is no use in talking any more. The only infection that I can think of that might produce such an acutely fatal illness is an acute miliary tuberculosis. Does miliary tuberculosis cause eosinophilia? I do not remember having observed it, although I have not seen many cases. That is one point against it. The tuberculin test was negative, but the tuberculin test is frequently negative in overwhelming infection by the tubercle bacillus. So we can allow that. The third point against it is this osteoblastic activity in the bone, which one would think ought to be osteolytic. I am not sure whether tubercles scattered throughout the bone marrow can "tickle up" the osteoblasts enough to lay down a little bone. I do not, however, feel satisfied with the diagnosis of tuberculosis.

The diagnosis of acute bacterial endocarditis ought to be entertained, but again there is no evidence of embolic phenomena, and the bone involvement does not seem to go with it. I am trying to make a soft bed for myself by saying that tumor is the logical diagnosis, but I am going to cross that out and say that this man had a fulminating infection, probably miliary tuberculosis.

DR. J. H. MEANS: Dr. Napier is here, and I have asked him to comment on the eosinophilia.

DR. L. EVERARD NAPIER: My remarks will not bear any relation to this case, but I have been in

the tropics, where we see a good deal of eosinophilia, much of which we cannot understand. We call it idiopathic eosinophilia. Frequently we find it running up to 60 or 70 per cent without any obvious

FIGURE 3. *Photograph of the Pleural Surface of the Lung.*

reason. Another aspect of eosinophilia in the tropics is the high eosinophilic count in the normal population, as compared with the figures one sees in the textbooks that are based on experience in temperate climates. We have taken counts of so-called "healthy people" in India and found an average eosinophilic count of 14 per cent. A good deal of this is attributed to parasitic infestation. That is not the whole story, however. When we exclude infestation we find an average eosinophilic count of 5 to 7 per cent. So the presence of eosinophilia would not excite me the same way that it does you here. The one thing you think of is trichinosis or trichiniasis, — it should really be called "trichineliasis" to be correct, — but we do not think of that in India because we scarcely ever see it. We have seen eosinophilia of the lung or eosinophilic pneumonitis, but it is essentially a benign disease.

DR. JONES: I saw this patient and thought that he probably had a lymphosarcoma originating in the stomach. The chest findings were perfectly consistent with such a diagnosis, and the x-ray film of the stomach showed a curious mucosal pattern, which was like that of several cases of lymphosarcoma of the stomach that I have seen. On the basis of this trabeculation of the gastric mucosa and the rest of the story, that is, the chest findings and the bone lesions, I thought that lymphosarcoma secondary to a primary focus in the stomach was the logical diagnosis.

CLINICAL DIAGNOSIS

Lymphosarcomatosis.

DR. RICHARDSON'S DIAGNOSIS

Miliary tuberculosis.

ANATOMICAL DIAGNOSES

Carcinoma of stomach with metastases to the regional lymph nodes, pleura, lung, pericardium, peritoneum and vertebras.

Lymphatic spread of pulmonary metastases.

PATHOLOGICAL DISCUSSION

DR. CASTLEMAN: Both lungs were voluminous and filled the entire chest cavity. Scattered over both pleural surfaces was a yellow-white, lacelike network, which reminded me a bit of the lacteals in the intestines when they are ballooned with fat. This network was bright yellow in places and formed a pattern of the entire lymphatic system of the pleura (Fig. 3). It was very striking. This pleural process involved the entire pleura and extended on to the pericardium at the pleural reflection. This same lymphatic engorgement was seen throughout

FIGURE 4. *Photograph of the Mucosal Surface of the Stomach.*

the parenchyma of both lungs. We, of course, thought of metastatic carcinoma and focused our attention on the stomach. Along the lesser curvature we found enlarged lymph nodes adherent to the pancreas, but the pancreas itself looked normal.

Along this curvature we also found a slightly rigid area 2 to 3 cm. long that was only superficially ulcerated. The mucosal folds, however, were prominent (Fig. 4), and this prominence is undoubtedly

FIGURE 5. *Photomicrograph Showing Nests of Carcinoma in Distended Lymphatics of the Lung and Pleura.*

what was seen in the x-ray and led Dr. Jones to think of a lymphoma, because lymphoma does spread in submucosal tissues and elevates the mucosa. Of course, carcinoma can also spread in that way. These mucosal folds were high and could not be depressed so that we knew there was something, almost certainly a neoplasm, beneath the mucosa. Microscopically all the lymphatic vessels in the pleura and lungs were plugged with nests of neoplastic cells, which proved to be those of an undifferentiated carcinoma (Fig. 5). The primary lesion was, of course, the rigid area in the stomach; it had extended throughout the submucosa to involve the serosal lymphatic vessels, the peripancreatic lymph nodes and the peritoneum. The vertebral bone marrow was grossly involved, and it is surprising that the red-cell count was high. Two or three other counts were taken, and all were in the neighborhood of 5,000,000.

DR. RICHARDSON: If one had looked at the smear I suppose one might have found some evidence of red-cell activity.

DR. CASTLEMAN: This lung picture of lymphatic spread of metastases has been recently described by Dr. Mueller of the X-ray Department and by Dr. Sniffen of this laboratory.[2] About 70 per cent of all cases of lymphatic spread of cancer of the lungs come from the stomach; they usually occur in young persons, and the course is rapidly fatal.

DR. JONES: I think that it cannot be stressed too much that miliary lesions in the lungs may be due to many causes other than tuberculosis. One of the most frequent is metastatic malignancy.

REFERENCES

1. Case records of the Massachusetts General Hospital (Case 29421). *New Eng. J. Med.* **229**:658-660, 1943.
2. Mueller, H. P., and Sniffen, R. C. Roentgenologic appearance and pathology of intrapulmonary lymphatic spread of metastatic cancer. *Am. J. Roentgenol.* **53**:109-123, 1945.

The New England
Journal of Medicine

Formerly
The Boston Medical and Surgical Journal
Established 1828

Owned by the Massachusetts Medical Society and Published under the Jurisdiction of the Committee on Publications

Richard M. Smith, M.D., *Chairman*
James P. O'Hare, M.D. Conrad Wesselhoeft, M.D.
Oliver Cope, M.D. John Fallon, M.D.

Official Organ of
The Massachusetts Medical Society
and
The New Hampshire Medical Society

Editorial Board
Joseph Garland, M.D. Charles C. Lund, M.D.
Shields Warren, M.D. A. Warren Stearns, M.D.
C. Guy Lane, M.D. Dwight O'Hara, M.D.
William A. Rogers, M.D. Chester S. Keefer, M.D.
Stephen Rushmore, M.D. Fletcher H. Colby, M.D.
Henry R. Viets, M.D. Robert L. Goodale, M.D.
Robert M. Green, M.D. Chester M. Jones, M.D.
Harvey R. Morrison, M.D.

Associate Editors
Thomas H. Lanman, M.D. Donald Munro, M.D.
Henry Jackson, Jr., M.D.

Walter P. Bowers, M.D., Editor Emeritus
Robert N. Nye, M.D., Managing Editor
Clara D. Davies, Assistant Editor

Subscription Terms: $6.00 per year in advance, postage paid, for the United States (medical students, $3.50 per year); Canada, $7.04 per year (Boston funds); $8.52 per year for all foreign countries belonging to the Postal Union.

Material should be received not later than noon on Thursday, two weeks before date of publication.

The Journal does not hold itself responsible for statements made by any contributor.

Communications should be addressed to the *New England Journal of Medicine*, 8 Fenway, Boston 15, Massachusetts.

NON NOCERE

There come times in the course of human activities when, if we are wise, we pause and look over the lay of the land; see in what direction we are heading, where our goal lies, and if we have been on the right road. It is too easy for us to drift with the crowd, to join an easy-going pilgrimage with no certain knowledge of its shrine and with no critical ideas how the march should be conducted. We are a little like the wartime Londoner who attached himself to the end of a long sidewalk queue and after a while was asked by a passing friend whither he was heading. "I don't know," was the reply, "but it must be pretty good, this queue is so long."

Dr. Harry Bakwin, in his paper "Pseudodoxia Pediatrica," presented before the American Pediatric Society last fall and published elsewhere in this issue of the *Journal*, points out certain false practices into which pediatrics has fallen but from some of which it has recovered.

Midwifery, perhaps even obstetrics rather than pediatrics, has been responsible for the wiping out of the mouths of newly born infants and for the harsh removal of the protective vernix caseosa — practices now largely abandoned. No longer are mineral oil nose drops employed, nor is cod-liver oil poured into the mouths of crying babies, in those circles where the sanctity of human life is still highly regarded. Even the rigid feeding schedule, symbol of Teutonic regimentation and source of parental anxiety and infantile anorexia, is being relaxed in those rarefied stratums of society where it is recognized that infants can frequently contribute more to their own training than can their parents.

The indiscriminate tonsillectomy, according to Dr. Bakwin, — physicians, nurses and parents take notice, — may have its ill effects, and this anatomic sunderance, like the joining together in marriage, should not be entered into lightly. Myringotomy is a minor operation not to be performed without due regard to the fact that it is an operation, and it has been shown, even before the use of sulfonamide drugs, that the incidence of purulent otitis media can be sharply reduced by a reasonable abstinence in the use of direct otoscopy.

The lying-in hospital comes into Dr. Bakwin's purview. Convenient it certainly is for the obstetrician, but how safe is it for the infant, that by-product of obstetrics? There are risks to well babies lurking in crowded nurseries, not the least of which is the dreaded epidemic diarrhea of the newborn. In too many cases the pediatrician enters these temples of accouchement on sufferance only, and the obstetrician determines the alimentary career of the little visitor, come hell or high water.

We have, in fact, committed ourselves to a course of too much meddling in the physiologic affairs of our tots of destiny. We assail them with vitamins, regulate their feeding times and the methods of feeding them, correct their flat feet, unbend their

knock-knees and condemn them to orthodontia, forcing them to wear bird cages in their mouths. We believe that, in order to earn our guinea, we should fix something, when often the best service we could perform would be to pocket the fee and leave the patient alone.

MEDICOLEGAL ABSTRACTS

THIS issue of the *Journal* contains the initial article of a new department, "Medicolegal Abstracts." These abstracts have been and will be prepared by members of the law firm, Palmer, Dodge, Chase and Davis, and it is hoped that a sufficient number will be available so that one can appear monthly.

Many decisions in various courts of law are of vital interest to members of the medical profession and although certain of these are not nationally applicable, being based on the statutes of a single state, they give an idea of the trend of legal thought in matters pertaining to medicine.

These abstracts will be divided into four main groups, each with various headings, as follows: regulation of practice by government (power of government, unauthorized practice, qualification to practice, unlawful operations and treatment, and regulation of professional conduct); relation of patient and physician (right to compensation, liability for malpractice, and authority to operate and to give treatments); testimony by physicians (privileged communications between patient and physician, and medical expert testimony); and institutions (medical societies, medical schools, medical journals, and hospitals).

OBITUARY

ABRAHAM RUDY

1895–1945

Abraham Rudy was born in Bialystok, Russia, on February 18, 1895. He studied at the University of Rouen, Moscow University and the University of Berlin, receiving the degree of M.D. from the last-named institution in 1923. In the same year he came to the United States and interned at the Beth Israel Hospital in Boston from 1924 to 1925. During the following year he assisted Dr. Frederick M. Allen at the Institution for Metabolic Diseases. From 1926 to 1928 he was assistant in medicine at the Mount Sinai Hospital in New York City.

In 1928 he returned to the new Beth Israel Hospital in Boston, where he helped organize the Diabetic Clinic. As head of this clinic he devoted the next seventeen years to assiduous work and constant study. In his quiet, scholarly way he made important contributions to the understanding of the disease to whose alleviation he had devoted himself. He wrote on the role of heredity in diabetes, the carbohydrate metabolism of the skin, vitamin deficiencies in diabetics, diabetic retinitis and the neurologic manifestations of diabetes. He was the author of two books, *Practical Handbook for Diabetic Patients* and *Simplified Diabetic Manual*. His authority was recognized by the New York Diabetes Association, which invited him to write two of the fundamental concepts in *Treatment of Diabetes Mellitus and Its Complications*.

Abraham Rudy was instructor in medicine at Tufts College Medical School and associate in medicine at the Beth Israel Hospital. He was a member of the Massachusetts Medical Society, American Medical Association, Greater Boston Medical Society, Boston Society of Biologists, New England Heart Association, Society of Endocrinology and American Diabetes Association, as well as a fellow of the American College of Physicians.

Doctor Rudy's twenty-odd papers were the result of hard work, keen investigation, enthusiastic inquiry and painstaking clinical investigation. In his contacts with students, colleagues and patients he was invariably gentle, sympathetic and helpful. He had infinite patience. In the last two years of his life, with full knowledge of his fatal illness, he continued his daily work, influencing by precept and example all those who knew him. He was an inspiring physician.

S. S. and H. S.

MASSACHUSETTS MEDICAL SOCIETY

DEATHS

SHEEDY — John F. Sheedy, M.D., of Lawrence, died April 2. He was in his seventy-fourth year.

Dr. Sheedy received his degree from Baltimore University School of Medicine in 1898. He was a fellow of the American Medical Association.

WRIGHT — Rebekah Wright, M.D., of Brookline, died March 29. She was in her seventy-third year.

Dr. Wright received her degree from Northwestern University Woman's Medical School, Chicago, in 1896. For many years she was associated with the Massachusetts State Department for Mental Diseases as a consultant in hydrology. Since February 1, 1945, she had been consulting hydrologist at the Connecticut State Hospital, Middletown. She was a member of the American Medical Association, the American Psychiatric Association and the New England Society of Psychiatry.

MEDICOLEGAL ABSTRACT

Power of Government: Licensing as chiropractors of persons not qualified to be physicians and surgeons.

The effect of a recent decision of the Texas Court of Criminal Appeals may be that a person is permitted to practice chiropractic in that state only if he has satisfied the educational and other requirements to qualify to practice medicine. The court held that the attempt in the Texas Chiropractic Act to license chiropractic as there defined as a separate science violated the State Constitution.

The Constitution provided:

> The Legislature may pass laws describing the qualifications of practitioners of medicine in this State, and to punish persons for mal-practice, *but no preference shall ever be given by law to any schools of medicine* [emphasis supplied].

The act provided:

> Chiropractic is defined to be the science of analysing and adjusting the articulations of the human spinal column, and its connecting tissues, without the use of drugs or surgery. Chiropractic shall in no sense be construed or defined as treatment or attempted treatment of patients by use of surgery or medicine.

The court treated chiropractic as defined in the act as a "school of medicine," within the meaning of the Constitution, and held that "the term 'schools of medicine,' as there used, means, and has reference to, the system, means, or method employed, or the schools of thought accepted, by the practitioner."

The court went on to point out how the act gave a preference to the chiropractic school of medicine. The court said that the educational qualifications required for the practice of medicine were decidedly more onerous than those required for the practice of chiropractic and that the subject embraced in the examination given applicants for chiropractic differed from those given applicants to practice medicine. The court further pointed out that the act took away from persons licensed to practice medicine the right to do so by the chiropractic system of the healing art and required that they must first qualify by satisfactorily passing the examination required under the Chiropractic Act.

The court argued that the Chiropractic Act gave a preference to a particular school of medicine, although the Optometry Act and the Dental Act, which were in many respects similar, did not give such a preference. The Optometry Act defined optometry as "the employment of objective or subjective means, without the use of drugs, for the purpose of ascertaining and measuring the powers of vision of the human eye, and fitting lenses or prisms to correct or remedy any defect or abnormal condition of vision." And the act provided, "Nothing herein shall be construed to permit optometrists to treat eyes for any defect whatsoever in any manner, nor to administer nor to prescribe any drug or physical treatment whatsoever, unless such optometrist is a regularly licensed physician or surgeon under the laws of this state." The Courts said:

> Thus the distinction between optometry and chiropractic is apparent. One relates to a particular organ of the body, without treating that organ for disease or disorder. Chiropractic relates to the whole of the body, and authorizes the treatment thereof for diseases or disorders.

Under the Dental Act the business of dentistry was to diagnose, treat, remove stains or concretions from teeth, treat, operate or prescribe, by any means or method, for any disease, pain, injury, deficiency, deformity or physical condition of the human teeth, alveolar process, gums or jaws. And the Court said:

> Thus, in his particular field of endeavor, the dentist is restricted to a certain part of the human body. He is not authorized to treat the body generally for a disease or disorder. . . .
>
> The Dental Act bears the same distinguishing features as does the Optometry Act.

The court's decision, being based on a violation of the Texas Constitution, may not have an important bearing in other states, for the court points out that many states are without a provision similar to that in the Texas Constitution that no preference shall ever be given by law to any schools of medicine. Nevertheless, the effect in Texas is to require for the qualification of chiropractors the same standards required for the qualification of physicians and surgeons. — (*Ex parte Halsted*, Texas, 182 S.W. [2d] 479 [1944].)

CORRESPONDENCE

SHELTERED WORKSHOP

To the Editor: Private physicians may send their patients with arrested tuberculosis who are able to do part-time work to the Sheltered Workshop, 35 Tyler Street, Boston. This shop is sponsored by the Boston Tuberculosis Association. All applicants are examined for admission by Dr. H. Louis Kramer on Mondays at the shop at 4 p.m.

Usually beginners are assigned two hours' work each day. The women are taught sewing, and the men carpentry, by well-educated and experienced teachers. Patients on the two-hour schedule arrive at the shop at 10 a.m. and are given a glass of milk and crackers. The patient then works until noon, when a substantial dinner is served. There is a rest hour from 1 to 2 p.m., after which the patients on a two-hour schedule go to their homes. The hours of work are increased by Dr. Kramer until finally the patient is doing a full day's work.

Guidance toward permanent placement in industry is given by the follow-up worker, who is employed by the Boston Tuberculosis Association. During the fifteen-year period in which the Sheltered Shop has been operating it has been found that 80 per cent of the patients who have received training in it have continued to remain well. The majority of these patients have been referred to the shop from board-of-health clinics and state and private sanatoriums: private physicians, however, might well employ this service for their patients. Further details can be secured by telephoning the Sheltered Workshop (Devonshire 8328).

CLEAVELAND FLOYD, M.D., *President*
Boston Tuberculosis Association
554 Columbus Avenue
Boston

BOOKS RECEIVED

The receipt of the following books is acknowledged, and this listing must be regarded as a sufficient return for the courtesy of the sender. Books that appear to be of particular interest will be reviewed as space permits. Additional information in regard to all listed books will be gladly furnished on request.

Trichinosis. By Sylvester E. Gould, M.D., D.Sc., pathologist and director of laboratories, Eloise Hospital, Eloise, Michigan and assistant professor of pathology, Wayne University College of Medicine, Detroit. 8°, cloth, 356 pp., with 128 illustrations. Springfield, Illinois: Charles C Thomas, 1945. $5.00.

The incidence of trichinosis in the United States has increased greatly in the past decade. Most of the cases studied after autopsy were not diagnosed during lifetime, revealing that the disease is not usually recognized except when it occurs in epidemic or severe form. The purpose of the volume is to bring the more important aspects of trichinosis to practitioners and possibly also to the attention of those producing and handling pork. An extensive bibliography of 32 pages concludes the work. The book is well printed on good paper and is illustrated sufficiently to bring out special points in the text.

A Method of Anatomy: Descriptive and deductive. By J. C. Boileau Grant, M.C., M.B., Ch.B., F.R.C.S. (Edin.), professor of anatomy, University of Toronto. Third edition. 4°, cloth, 822 pp., with 729 illustrations. Baltimore: Williams and Wilkins Company, 1944. $6.00.

The text in this third edition of an authoritative anatomy has been revised, and many parts have been rewritten and rearranged. Fifty-five new illustrations have been added, and sixty-nine old illustrations have been redrawn and relabeled.

Hackh's Chemical Dictionary. Completely revised and edited by Julius Grant, M.Sc., Ph.D., F.R.I.C. Third edition. 8°, cloth, 925 pp. Philadelphia: Blakiston Company, 1944. $12.00.

Dr. Julius Grant is responsible for this new edition of an essential reference work. The dictionary has been completely revised and brought up to date in every respect, special care being taken to balance the treatment from the American and British points of view. The dictionary now contains over 57,000 definitions. It is recommended for all libraries and all persons having to do with chemistry.

Immuno-Catalysis. By M. G. Sevag, Ph.D., assistant professor of biochemistry in bacteriology, Department of Bacteriology, School of Medicine, University of Pennsylvania, Philadelphia. With a preface by Stuart Mudd, M.D., professor of bacteriology, School of Medicine, University of Pennsylvania, Philadelphia. 8°, cloth, 272 pp., with 19 tables. Springfield, Illinois: Charles C Thomas, 1945. $4.50.

In the preparation of this monograph more than a thousand publications in English, French and German were consulted for material having a direct bearing on the subject matter. The author was unable to consult the literature in unusual languages, such as Russian, Chinese and so forth, although material pertinent to his subject may have been published in these languages. The work is divided into the following parts: antigens as bio-catalysts; antibody as a specific enzyme inhibitor; anti-enzyme immunity; immunity against bacterial enzymes; and the problem of antibody formation against respiratory enzymes. A bibliography of four hundred and eighty-two items is appended to the text.

Ventures in Science of a Country Surgeon. By Arthur E. Hertzler, M.D. 8°, cloth, 304 pp., with 85 illustrations. Halstead, Kansas: Arthur E. Hertzler, 1944. *Free.*

This collection of essays, principally in the field of surgery, epitomizes the experience of Dr. Hertzler over a period of fifty years in medical practice. Here will be found a summary of his original investigations on the anatomy and physiology of the peritoneum and on the healing of wounds. Two interesting chapters on the writing of books and the building of a library should interest all librarians, as well as physicians who have literary inclinations. The chapter on visual education describes the author's methods in caring for microscopic slides, photographs and drawings.

A Bibliography of Aviation Medicine: Supplement. By Phebe M. Hoff, Ebbe C. Hoff, Ph.D., and John F. Fulton, M.D. Publication No. 9, Historical Library, Yale Medical Library. 4°, cloth, 109 pp. Washington, D.C.: Committee on Aviation Medicine, Division of Medical Sciences, National Research Council, acting for the Committee on Medical Research, Office of Scientific Research and Development, 1944. $2.50.

This supplement brings up to date the literature of aviation medicine scattered throughout medical journals published during the past two years. A total of 2336 entries has been added to the original 5745 listed in the original bibliography. In the supplement more than two hundred additional journals have been added to the nine hundred cited in the original work. All the periodicals noted in the original or in the supplement have been brought together in one alphabet so that readers will not be obliged to refer back to the appendix of the original work. This book should be in all reference collections, as well as in the libraries of doctors interested in aviation medicine.

Pep, Pills and Politics: An odyssey of two cities. By Arthur W. Hopkins, M.D. 8°, cloth, 239 pp., with 23 illustrations. Brattleboro, Vermont: Vermont Printing Company, 1944. $2.50.

This is an interesting autobiography of a country physician who became a power for good in his community. Dr. Hopkins writes interestingly of his childhood, his college and medical-school days at Dartmouth, his internship and the first years of practice. He concludes his narrative with stories about his later years of practice and his participation in town affairs.

Combustible Anesthetics in Hospital Operating Rooms. 8°, paper, 16 pp. Boston: National Fire Protection Association, International, 1944. 20 cents.

This advisory pamphlet embodies the report of the Conference Committee on Operating Room Hazards, which was officially adopted by the National Fire Protection Association in 1944. The first five sections contain the recommended safe practice for the use of combustible anesthetics in hospital operating rooms. The sixth and seventh sections contain recommendations concerning electrical wiring and equipment and on the reduction of electrostatic hazard. This pamphlet should be in the library of the superintendent's office of every hospital.

Surgery of the Hand. By Sterling Bunnell, M.D. 4°, cloth, 734 pp., with 597 illustrations. Philadelphia: J. B. Lippincott Company, 1944. $12.00.

This new book was primarily designed to treat reconstruction but has been expanded to include other aspects of surgery that seemed necessary to complete the work. An effort has been made to keep the work concise and not to overburden it with historical references but merely to express the facts on a working basis. It is profusely illustrated and printed on good paper with a good type but is heavy, as is usual with books made of coated paper.

Essays in the History of Medicine: Presented to Professor Arturo Castiglioni on the occasion of his seventieth birthday, April 10, 1944. Edited by Henry E. Sigerist, with the assistance of Genevieve Miller. 4°, paper, 358 pp., with illustrations and frontispiece. Supplement No. 5 to the *Bulletin of the History of Medicine.* Baltimore: Johns Hopkins Press, 1944. $3.50.

Dr. Castiglioni was honored by twenty-six of his associates and friends who collaborated in writing the essays contained in this memorial volume. The bibliographic chapters of Drs. Fulton, Galdston and Proskauer on Polydorus Vergilius, J. A. F. Ozanam and Hans Sachs, respectively, are of particular interest. Miss Genevieve Miller's paper on an early American marine medicine chest is a welcome contribution to the history of Colonial medicine. The volume is prefaced by an interesting dedicatorial letter by Dr. Sigerist, followed by a bibliography of the books and articles written by Dr. Castiglioni, comprising one hundred and sixty-four items.

Principles and Practice of Surgery. By W. Wayne Babcock, M.D., acting consultant, Philadelphia General Hospital. 4°, cloth, 1331 pp., with 1141 engravings and 8 colored plates. Philadelphia: Lea and Febiger, 1944. $12.00.

Dr. Babcock's new text on surgery is the work of thirty-seven collaborators, all of whom, with one exception, are affiliated with Temple University. The work covers practically every method of surgical diagnosis and treatment.

Ourselves Unborn: An embryologist's essay on man. By George W. Corner, M.D. 8°, cloth, 188 pp., with 18 illustrations. New Haven: Yale University Press, 1944. $3.00.

This small volume contains the Terry Lectures given at Yale University by Dr. Corner. The first lecture is entitled "The Embryo as Germ and as Archive"; the second, "Prenatal Fate and Foreordination"; and the third, "The Generality and the Particularity of Man."

Contagious Diseases: A guide for parents. By W. W. Bauer, M.D., director, Bureau of Health Education, American Medical Association. Second edition. 12°, cloth, 188 pp. New York: Alfred A. Knopf, 1944. $2.50.

The first edition of this popular book appeared in 1934, and this edition embodies the advances in the treatment and diagnosis of the contagious diseases that have taken place in the interim. The text has been thoroughly revised and rewritten and should be of help to parents confronted with this type of disease.

The Pathology of Internal Diseases. By William Boyd, M.D., LL.D., F.R.C.P. (Lond.), professor of pathology and bacteriology, University of Toronto. Fourth edition, thoroughly revised. 8°, cloth, 857 pp., with 366 illustrations and 8 colored plates. Philadelphia: Lea and Febiger, 1944. $10.00.

This authoritative text has been thoroughly revised in the light of recent advances in pathology. Much new material has been added, and many sections have been rewritten, especially those covering the etiology of rheumatic fever, calcareous aortic stenosis, the time factor in coronary infarcts, the arterial lesions of hypertension, diffuse arteriolar sclerosis, healed infarcts of the lung, the geography of primary carcinoma of the liver, pyelonephritis, intracranial aneurysms and the pathogenesis of poliomyelitis. Twenty-two new figures and four new colored plates have been added to the text.

Fractures and Fracture Treatment in Practice. By Kurt Colsen, M.D., tutor to the Department of Surgery and registrar to the Surgical Firm, University of the Witwatersrand, Johannesburg. Second edition, revised. 8°, cloth, 154 pp., with 163 illustrations. Johannesburg: Witwatersrand University Press, 1944. 12 shillings, 6 pence (plus 4 pence postage).

This small manual has been written for students and practitioners, and the text has been revised in keeping with advances in the subject since the first edition was published in 1942.

Arthritis and Allied Conditions. By Bernard I. Comroe, M.D., associate in medicine, University of Pennsylvania, and senior ward physician and chief of the Arthritis Clinic, Hospital of the University of Pennsylvania. Third edition, enlarged and thoroughly revised. 8°, cloth, 1359 pp., with 329 illustrations. Philadelphia: Lea and Febiger, 1944. $12.00.

This new edition of a standard work has been enlarged by the addition of thirteen new chapters and more than a hundred new photographs. The work has been thoroughly revised, and extensive changes have been made in the text to bring the subject matter up to date. New chapters have been added on penicillin, psychogenic factors in rheumatic diseases, rheumatic manifestations of tropical diseases, Dupuytren's contracture, effect of climate on arthritis, occupational therapy, and differential diagnosis of rheumatoid arthritis. The chapter on massage has been enlarged, twenty photographs having been added. The sections on orthopedic care, roentgen diagnosis and therapy, and physical therapy have been expanded. Rheumatoid arthritis and degenerative joint disease are discussed in detail. The etiology and treatment of painful shoulder and bursitis, as well as painful feet and backache, are thoroughly covered. The book has been written for the general practitioner, and emphasis has been placed on treatment.

Manual of Clinical Mycology. By Norman F. Conant, Ph.D., assistant professor of bacteriology, Duke University School of Medicine, and mycologist, Duke Hospital; Donald S. Martin, M.D., associate professor of bacteriology and associate in medicine, Duke University School of Medicine; David T. Smith, M.D., professor of bacteriology and associate professor of medicine, Duke University School of Medicine; Roger D. Baker, M.D., associate professor of pathology, in charge of surgical pathology, Duke University School of Medicine; and Jasper L. Callaway, M.D., assistant professor of medicine, in charge of dermatology and syphilology, Duke University School of Medicine. Prepared under the auspices of the Division of Medical Sciences, National Research Council. 12°, cloth, 348 pp., with 148 illustrations. Philadelphia and London: W. B. Saunders Company, 1944. $3.50.

During the past ten years the authors have had the opportunity of studying all types of mycoses. They believe that it is necessary to consider mycotic disease in the differential diagnosis of practically every obscure infection.

The Biological Basis of Individuality. By Leo Loeb, M.D. 8°, cloth, 711 pp. Springfield, Illinois: Charles C Thomas, 1945. $10.50.

In this book the attempt has been made to distinguish between two types of individuality: the mosaic, which represents the sum of the particular organ and tissue characteristics, thus determining structure, metabolism and motor and psychical activities, and the type that may be designated as the essential individuality, which is characterized by the presence of a chemical factor. These types of individuality are analyzed regarding their evolution and their biologic and physical manifestations. The work is based on a series of investigations on the transplantation of normal tissues and of tumor tissues that the author and his collaborators have carried out in the course of forty-eight years.

The Art of Resuscitation. By Paluel J. Flagg, M.D., visiting anesthetist, Manhattan Eye and Ear Hospital, and consulting anesthetist, St. Vincent's, The Woman's, Sea View, Jamaica, Mount Vernon, Flushing, Mary Immaculate, St. Mary's and Nassau hospitals. 8°, cloth, 453 pp., with 176 illustrations. New York: Reinhold Publishing Corporation, 1944. $5.00.

This monograph on asphyxia and resuscitation is based on the author's twenty-five years of intimate experience with unconscious patients. The work begins with a chapter on history, which is followed by one on the principles of resuscitation and by others on asphyxia as a generic and as a specific problem. A large part is devoted to the discussion of the field of asphyxia and resuscitation, especially in the armed forces, in industry and in public health. Part six is on the co-ordination of gas therapy and includes an interesting table on the signs of death. Part seven discusses the instruction of technicians, asphyxia neonatorum and judicial electrocution. A bibliography of ten pages is appended to the book.

NOTICES

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING THURSDAY, JUNE 21

FRIDAY, JUNE 22

*9:00–10:00 a.m. Medical clinic. Isolation Amphitheater, Children's Hospital.

10:50 a.m. What Not to Do in Dermatology. Dr. Edward LaFreniere. (Postgraduate clinic in dermatology and syphilology.) Amphitheater, Mallory Building, Boston City Hospital.

SATURDAY, JUNE 23

*10:00 a.m.–12:00 m. Medical staff rounds. Peter Bent Brigham Hospital.

(*Notices continued on page xvii*)